. . . Index to Contents, July, 1939 . . .

The Annual Index for each volume is published in the December issue

Accounting, Municipal
Property Ledgers in City Departments . . . 44

Bridges
A Flood Threat Eliminated . . . 76

Business and Industrial Development
Municipal Funds for Industries . . . 81

Cartoon
"We gotta open it again" . . . 11

Celebrations
Detroit Bans Carnivals Regardless of Sponsor . . . 83

City Manager Plan
Recent City Manager Appointments . . . 85

Civic-Commercial Organizations
Facing "The Nation's No. 1 Economic Problem" . . . 70
"Council of Presidents" to Coordinate Civic Organizations . . . 74

Civil Liberties
Civil Liberties and Municipal Powers—The Hague Case . . . 35

Conventions
Conventions—When and Where . . . 103

Finance and Taxation
Tax Work Made Easy . . . 69
Net Bonded Debt of 268 Municipalities . . . 79
The Municipal Bond Market . . . 85

Fire Prevention and Control
Fire Drills and Nozzles in Boston . . . 15
Manual Fire-Alarm System for 500 Alarms . . . 39
San Diego's Fire Station No. 4 . . . 77

Flood Prevention
Flood-Plain Zoning and Evacuation . . . 68
A Flood Threat Eliminated . . . 76

Forward Steps
Items Contributed by Officials and Others . . . 74

Government and Administration
Civil Liberties and Municipal Powers—The Hague Case . . . 35
A Summer School for City Attorneys . . . 52
Facing "The Nation's No. 1 Economic Problem" . . . 70
Practical Lessons in Citizenship for Springfield, Mo., Children . . . 93

Housing
Housing and Community Planning . . . 5
Photographs Dramatize Housing . . . 47
Amendments to Housing Acts . . . 70
Legal Status of Housing Trailers Clarified . . . 83

Legal Decisions
Civil Liberties and Municipal Powers . . . 35
Court Decisions Affecting Municipalities . . . 95

Lighting, Outdoor
The Science of Safety Lighting . . . 121
No Vision—People Perish . . . 123
Servicing High Lights from Below . . . 124
Junior Chamber Means Light Up to Date . . . 124

Motor Equipment
San Diego's Fire Apparatus . . . 77
Police Motorcycles, Poughkeepsie . . . 115
Motor Grader with Tractor on Unimproved Streets in Speedway City, Ind. . . . 117

News and Illustrations
Hints for Officials . . . 105

Parking Meters
Parking Meters Help Duluth Police . . . 15
Curb Parking Solved in Nation's Capital . . . 53

Parks and Recreation
Public Recreation Gains . . . 48
Savannah Improves Her Parks and Squares . . . 74
A Big-Time Community Center for a Small Pennsylvania Borough . . . 75
Enthusiasm for Open-Air Theatre . . . 76
Portland Plans "Pay-As-You-Go" Recreation . . . 83
Steel Bleachers for Softball Games . . . 109

Planning and Zoning
Housing and Community Planning . . . 5
"The Magic City of Progress" . . . 40
Redevelopment Plan for R. I.'s So. Shore . . . 49
Flood-Plain Zoning and Evacuation . . . 68
Flooding Caused by Dam Brings Improved Planning to City . . . 74
Alternatives in Urban Growth . . . 81
Zoning and Planning Notes . . . 91

Police and Crime
Radios Cooperate in Catching Criminal . . . 15
New Police Radio at Kansas City . . . 60
Motorcycles, Poughkeepsie Police Department . . . 115

Power Plants
A New Spark Arrester for Diesel Exhausts . . . 117
Air Compressors Made for Starting Diesels . . . 117

Publications
New Books and Pamphlets . . . 97

Public Utilities
System for Handling Customers' Complaints . . . 37
The Use of Property Ledgers in City Departments . . . 44

Public Works
Steel—Master Metal of Machine Civilization . . . 7
Public Works, an Aid to Private Investment . . . 66

Radio
Radios Cooperate in Catching Criminal . . . 15
New Police Radio at Kansas City . . . 60

Safety
Fewer Cracked Pots . . . 15
The First "Safe and Sane" Fourth . . . 50

Sewers and Sewage Disposal
Pictorial Presentation, Sewage Treatment . . . 11
Clean-Up Begins to Show Along Ill. River . . . 11
Storm-Water Sewers in Stamford, Conn. . . . 11
Many Cities Get Power from Sludge Gas . . . 11
"We gotta open it again" . . . 11
Sacramento's Combined Sewers . . . 48
Problems of Sewage Treatment . . . 57
New Storm-Water Pipe for Low Clearance . . . 105
Water Power for Sewer-Cleaning Machine . . . 107

Street Construction and Maintenance
Louisville Combines Hand and Machine Finishing in Street Reconstruction . . . 42
Joint Paving Project of City and County of Lorain . . . 51
Asphalt Stabilized Runways . . . 55
Extensive Resurfacing Program by Fort Dodge, Iowa . . . 67
Asphalt Construction Bulletins Available . . . 113
Motor Grader with Tractor Working on Unimproved Street in Speedway City . . . 117
Flushing the Streets of N. Y. World's Fair . . . 119

Traffic Control and Facilitation
Implementing Traffic Safety . . . 7
"The Magic City of Progress" . . . 40
Curb Parking Solved in Nation's Capitol . . . 53
Uniform Traffic Signs . . . 60
Long-Lasting Signs . . . 71
Pedestrian Control Reduces Traffic Accidents . . . 83
Court Decision, New Law, Establish Parking Violation Responsibility . . . 85
Graphic Counters Analyze Traffic Behavior . . . 87
ABC of the Parking Problem . . . 89
New Self-Propelled Traffic-Line Marker . . . 107
Counting Highway Traffic . . . 109

Waste Collection and Disposal
Charges for Refuse Collection, Palo Alto . . . 13
What's Thrown Away and What It Costs . . . 13
Profit Accrues from Refuse Collection . . . 13
Refuse Collection in Los Angeles . . . 13

Waterfronts
Shore Protection with Concrete . . . 109

Water Supply and Water Works
Full-Time Inspector Looks After Hydrants . . . 9
Lignin from Corn-Cobs Removes Iron from Water . . . 9
Hardness of Water in Georgia Supplies . . . 9
Backfilling a Water-Main Trench in Calif. . . . 9
System for Handling Customer Complaints . . . 37
Water Rates and Service Charges—V . . . 61
$1,000,000 in Interest Saved on Water Bonds . . . 85
New Yarning Material for Bell-and-Spigot Cast Iron Pipe . . . 105
Buried-Pipe Locator Has Sectional Probe . . . 105
New Small Pump for Deep Wells . . . 107
The Treatment Trailer Gets a New Skipper . . . 107
Improved Water Softener Using Cold-Lime Process . . . 107
Outstanding Exhibits at A. W. W. A. Convention . . . 109
Device Aids Flows of Separate Meter Units . . . 111
Huge Elevated Tank Shipped on Single Barge . . . 111
Copper and Brass Pipe and Tube Catalog . . . 111
Strainer Head for Filters and Softeners . . . 115

VOL. LIV — JULY
No. 7 — 1939

The American City

Issued Monthly by the
American City Magazine Corporation
470 Fourth Ave., New York
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Subscription, $2 per annum in
United States and Canada
($3 to foreign countries)
Single copies, 35c
Back numbers over 3 months old, 50c
Entered as second-class matter, July 29, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879.
Printed in U. S. A.

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In THE MUNICIPAL INDEX AND ATLAS (the annual reference volume of data and condensed catalogs published by the American City Magazine Corporation) readers will find statistical material, and articles on a wide variety of municipal and public works subjects, not published in the monthly issues of the magazine.

See pp. 17, 18, 20, 97, 99, 101 for catalogs and publications on municipal and civic subjects

For Index to Advertisements see page 130

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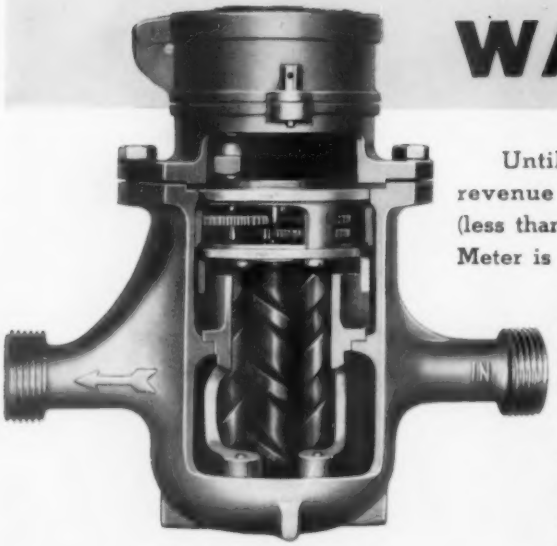

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Remember—PITTSBURGH IMO METERS WEAR IN WHERE OTHERS WEAR OUT

Housing and Community Planning

*As Three Business Men See the Problem**

By Beardsley Ruml

Treasurer, R. H. Macy & Co.:

PROPER housing is desperately important. It is important for the individual, for the city, for the nation. It is important for health, for civilized living, for economic recovery. At every point along the housing front there are weaknesses that specialists can point out, but also at every point there are economic and political interests which have a stake in the present disorganization of the housing industry. Accordingly, sacrifices made by one interest are likely to be absorbed as gains by other interests unless and until a more general conception prevails, or until the effect of economic pressure drives some particular interest from the scene, as happened with the three-year mortgage in 1933. . . .

If we are going to raise the standard of housing, it is important that we give attention to the whole nature of our community structure in which our individual homes are to be built. We are all aware of the extent to which well-built houses in comfortable communities have been destroyed by planned and unplanned shifts in the character of the neighborhood. The encouragement of commercial and industrial buildings on residential areas has often destroyed the areas. Sometimes communities which have been built up as single-family dwelling communities have been exploited by the influx of rooming houses or of apartment buildings. Stricter and more intelligent zoning is part of the cure, but it is not the whole cure. We require a more comprehensive program of city and regional planning which will assure a continuing character of higher quality to our neighborhoods.

The problem of land control and community building is closely related to the problem of land values. It is entirely conceivable that the savings which can be secured through the lowering of financial charges, the decline in the price of materials, and any decline in labor costs, may be swallowed up in increased prices for land.

By Henry R. Luce,

President, Time, Inc.:

FOR years and years, a painful comparison has been made between the automobile and the house—the one a huge success, the other a flat failure. But it is naive to think of the automobile as simply a machine for transportation. It is equally naive to think of a house as simply a machine for shelter. What therefore was there, what *is* there in an automobile that makes it so marketable at a big profit? You know very well what Detroit sells. Not transportation. Detroit sells the feeling of power; every man a monarch of the road, romance, the lure of far places. Detroit sells the love of gadgetry, speed, personal freedom, pride, adventure, power, romance. That is what Detroit sells. And it is entitled to get its price and get it handsomely.

Well, what have we, partisans of the house and the home, got to offer in competition with Detroit? . . .

Now we are not going to build the house of our grandmothers for our children or our children's children to live in. What our substitute is going to be for real fires in real fireplaces, I do not know. Nor what the adequate substitutes for dark attics, and windowpanes that crack. But these are the values that we must build into our homes. We? We cannot build them. The American people must build the new imaginative values into their homes if they are going to love them as much as automobiles. All we can do is to love the idea and provide the shapes and structures to begin with.

But what I can urge is this—and as a matter of profound need in our economic statesmanship—that all of us who venture to touch housing in any way should never forget that a home is built not of brick or wood or stone but around a philosophy of life. And we are not really interested in houses. We are interested in homes.

By Raymond V. Parsons,

Research Engineer, Johns-Manville Corporation:

A HOUSE is not housing. It must have a site, and it must be connected by utilities and lines of transportation and communication to a community. It must bear its share of the cost of maintaining the community, and one reason why housing costs as much as it does cost, is that the cost of community and city maintenance has been constantly rising. Speculation in land alone has made it virtually impossible for the lower income group to live in cities, yet they must contrive an existence there because their sources of employment and income are in cities.

Not necessarily the only, but at least one, solution for this problem is the creation of new controlled communities patterned on the true English garden city lines as exemplified at Letchworth, Welwyn and Wythenshawe, England. There, local diversified industries and populations of all income groups are experiencing a new pattern of living. The creation of such communities in the United States would place the entire cycle of housing on a mass production basis. Raw agricultural land could be used at raw agricultural land values, and this cheap land could be kept cheap by holding it in trust for the community as a whole. It might be leased for 99 or 999 years, but not sold to become the toy of speculators and exploiters. Streets, utilities, factories and, finally, houses could be constructed on a mass-production basis. The size of the communities would be held to a definite figure, not less than 30,000, nor more than 100,000 population, so that utilities would not have to be continually scrapped and rebuilt to take care of an uncontrolled and unanticipated growth. All of our present-day knowledge of town and regional planning could be utilized.

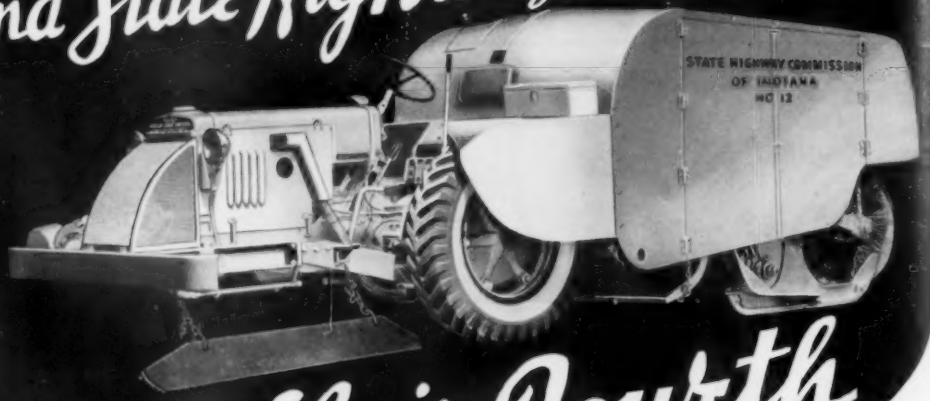
One of the first industries for such a garden city would be a house-manufacturing industry — making modular *units* of houses in a nice, cozy factory, operating the year around, and with which any type, style, or size of house could be assembled on the site in a few days. Building ten to twenty thousand houses a year is big-time business. It could utilize all of the new techniques that are now available, such as the box-girder type of plywood construction developed at the Forest Products Laboratory, and now being used by several housing entrepreneurs. Transfer of much of the labor from job-site to factory would effect notable economies in house construction and provide year-around employment for the building trades—a much-to-be-desired development. . . .

Since business is in a mood to decentralize; since modern transportation facilities and regional power lines remove all necessity for centralization of industry and, to a certain extent, necessity for housing in close proximity to employment; since evidence of the desire for a suburban mode of living is all about us and we have learned how to make life in a small town even more attractive than mere existence in a metropolis; and since there can be no appreciable lowering of urban land values until the demand is withdrawn or a graded tax system is accepted, why not take housing out of the retail field as a speculation and do it on a wholesale investment basis?

---

* *Excerpts from the Digest published last month of papers presented at the 1939 Conference on House Building Technics, sponsored jointly by Yale University and "Life." The complete report is available from the Department of Architecture, School of Fine Arts, Yale University.*

Indiana State Highway Commission



Buy Their Fourth

HOUGH

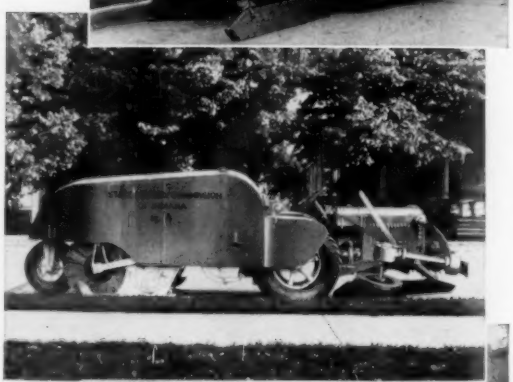
Motor Pick-Up Sweeper

One or more of the exclusive features of Hough Motor Pick-Up Sweepers—the positive dirt elevator; full 1¼ yard quick-emptying dirt box; new non-clogging spray nozzles; full floating brush and broom; ease of in-and-out maneuverability because of rear wheel steer; or greater coverage of more gutter miles per day—must be the reason for constant repeat orders!

Retaining the features of larger, outmoded sweepers—yet completely fulfilling the needs of today for a lighter, faster unit—the Hough Motor Pick-Up Sweeper thoroughly cleans a 6 ft. gutter path in a single pass at the rate of 20 to 25 curb miles per eight-hour day.

Modern design provides the use of a slow speed pick-up brush and a positive dirt elevator resulting in a thorough pick-up job when brooms are new or old. No down pressure high speed pick-up brush or broom cleaner bars are used.

Let us send you operating cost facts—the names of users in your vicinity and a copy of detailed Bulletin No. 112.



ROAD BUILDING and MATERIALS HANDLING EQUIPMENT

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Our Municipal Notebook

Implementing Traffic Safety

"THE traffic muddle in which New York now finds itself is due to several causes, the first being the tremendous increase in motor traffic; but almost as important has been the failure to seriously consider propositions which had they been heeded would have forestalled a large part of the present difficulties," said William Phelps Eno on March 8, 1923.

That sentence applies today to almost every municipality in the country, because nobody has grasped the traffic problem as if it were a handful of pebbles and not a stone. Each has let slip through his fingers those pebbles in which he did not particularly believe or in which he was not interested. Yet each of those pebbles is an equation which must be worked out accurately on the way to the final result.

What is needed is a comprehensive Exhibition of traffic control devices in connection with a meeting of traffic engineers and experts whose sole purpose is to understand, praise and criticize the exhibits.

Street Marking

Consider street markings. A number of state highway departments and municipal traffic bureaus, city engineers and police chiefs assert that painting is the only sane method, that there are no permanent markers and probably never will be. Another sizable group holds that permanent, or at least long-lasting, markers are better-looking and more economical.

Signs

The good-grade street sign industry has been all but knocked out of the ring by the numerous state and municipal agencies which brew their own. Many municipalities have lost touch with the sign manufacturing industry, which has in nowise been improved by the indifference.

Signals

If there are in the United States 100,000 intersections equipped with traffic signals, then there are several hundred thousand needing them. There is a school, however, which believes that there are far too many traffic signals installed already, that they slow down and pile up traffic, ruin drivers' dispositions, and tend to create accidents. There are also sound persons who want signals on every dangerous corner—and every corner is dangerous that you can't see around. What would seem to be needed here is much more experience with vehicle-actuated signals, for very few persons will assert that there can be too many signals telling them that cars are speeding toward intersections which they also expect to enter.

The B and C of the traffic problem are vital to agreeable as well as safer driving and walking, but they are not clearly visualized factors and they are drenched with psychology. In Engineering there is no psychology, only knowledge. Indeed it may be that Education *is* Enforcement and that Enforcement is Education: and that the third factor actually is Civilizing.

Meanwhile it would seem that the best results in diminished traffic accidents will accrue from the direct study of motor vehicles in motion and parked at each location, a profounder knowledge of the modern implements which control and facilitate their flow and use, and the wholehearted unprejudiced application of *these* implements in place of none or meager or homespun devices, so that today's traffic may be better controlled and facilitated, and the manufacturers of the public safety industry may be practically encouraged to bloom forth with ever better implements to strengthen the arm and reputation of traffic engineers.

Steel—Master Metal of Machine Civilization

THE city of tomorrow as it appears in steel's Hall of the Future at the New York World's Fair presents a vista of broad avenues and spacious parks, dotted with towering skyscrapers of glass, plastics and steel. Traffic is handled in an orderly way by streets of three levels, enabling the urbanite to travel quickly and safely from one end of the city to the other. To suggest the automatic character of business life of the new day, an executive is seen holding a conference with an image in the television cabinet attached to his desk, a situation likely to occur far sooner than such a city. Of special interest are prefabricated houses of steel in which whole rooms slide in and out like the drawers of a desk; and farming by radio control, featuring a farmer who by means of radio beams directs every step from sowing to harvesting and packing. The vanishing "L" of today may serve tomorrow as an elevated pneumatic tube system fed by an escalator. It is noteworthy that the cities of today are using about $75,000,000 worth of steel a year. The United States Steel Subsidiaries' exhibit is housed in a special building, with a dome of stainless steel 66 feet high and 132 feet wide. The dome itself features an "inside-out" design, the 350 tons of supporting steel trusses forming a part of the building's streamlined exterior.

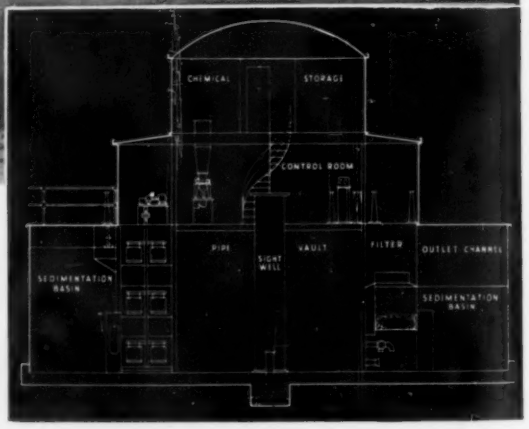
Big Steel at the New York World's Fair

Courtesy Mine Safety Appliance Co.
"Skullgard"

Fewer Cracked Pots

THE light, strong laminated bakelite helmet which for eight years has deflected many of the hazards of tunnel and bridge construction, is equally applicable to the tough going of baseball, hockey and speed-boat racing. In any coming contests between the fire and police department teams, the firemen are in a particularly favorable position to recommend the helmet which was first adopted by rescue squads. Last year Garden City, N. Y., bought six MSA helmets, this year twelve more, and further replacements will be of this type. In the recreation field, the polo style is found to give both physical comfort and a larger sense of mental security.

The MORSE FILTER PLANT



THE Morse Filter Plant is a modern, efficient unit individually engineered to fit specific water filtration requirements. Its versatility is comparable to Horton elevated tanks, in that both are built to meet local requirements.

The advantages of this unit are principally those of modern design and modern construction. The use of steel eliminates cracks and seepage. Other important features include: (1) flexibility of operation, (2) economical maintenance, and (3) long life resulting in low annual cost.

Address our nearest office for information.

Large Capacity—Small Space

The top view illustrates the Morse Filter Plant's ability to provide large capacity in a small area. This unit was installed recently for the Citizens Water Company at New Bethlehem, Pa. It has a capacity of 720,000 g.p.d., and yet measures only 49 ft. in diameter. Small ground space means a lower first cost, especially where land values are high. The diagram directly above is a cross-section of the filter plant, showing the relative location of its principal parts.

CHICAGO BRIDGE & IRON COMPANY

Chicago	2127 Old Colony Bldg.	Philadelphia	1616 "1700" Walnut St. Bldg.	San Francisco	1033 Rialto Bldg.
New York	3308-165 Broadway Bldg.	Boston	1501 Consolidated Gas Bldg.	Houston	2919 Main Street
Cleveland	2236 Rockefeller Bldg.	Birmingham	1502 N. Fiftieth Street	Tulsa	1625 Hunt Bldg.
Detroit	1501 Lafayette Bldg.	Dallas	1406 Liberty Bank Bldg.	Los Angeles	1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

Water-Works Information

Full-Time Inspector Looks After Hydrants

IN Madison, Wis., L. A. Smith, Superintendent of Water Works, reports that a full-time hydrant inspector is employed by the Water Department and provided with a truck and driver. He has complete charge of the hydrants. Repairs are made as he orders them, and all uses of hydrants are reported to him. In cold weather after the Fire Department or Street Department has used a hydrant it is pumped out, unless the hydrants have been drained between the time of the report and the arrival of the inspector. Night men are employed to pump out hydrants on cold nights after the Fire Department has used them. The total number of hydrants in Madison is 1,300.

Lignin from Corn-Cobs Removes Iron from Water

A DETERMINED search by the Agricultural By-Products Laboratory, of the U. S. Department of Agriculture at Ames, Iowa, for more practical uses for lignin, one of the principal waste products of the country, has resulted in the discovery that recovered lignin is very effective in treating hard water containing iron. In the experimental work, hard city water, hard well water, and water containing added iron were treated with lignin prepared from corn cobs, which was found to be very effective as an iron-removal agent.

Supplies of lignin are inexpensive because they are almost limitless. As a waste product of wood-pulp mills, where its disposal poilutes streams, it amounts to about 1,500,000 dry-weight-tons each year. At least six million tons a year is available from cornstalks, and an equal quantity from wheat straw. Other extensive supplies are cottonseed hulls and sugar cane bagasse—the fibre remaining after the juice has been squeezed from it.

Iron in small quantities, even as low as 0.25 parts per million, causes water to discolor clothes and in time causes serious clogging of mains. In industrial cities it is particularly essential that there be no iron in the water used in manufacturing dyes, textiles, paper and ice, and in the commercial preparation of foods and beverages. Iron in water is found in several forms, and while present methods of treatment are efficient in removing some of the forms of iron, D. F. J. Lynch, Director, Southern Regional Research Laboratory at New Orleans, who was in charge of the work at Ames, reports that only lignin gives good results with all the forms of iron.

In treating water that contained about 36 ppm of iron with 500 ppm of lignin, the iron content was reduced to an average of 0.2 ppm. The lignin was recovered and used again up to ten times with no appreciable lessening of efficiency. The same amount of an inorganic compound commonly in use reduced an identical iron content to 1.5 ppm for the first six times it was used, and thereafter rapidly lost its ability to remove the iron. Many cities may find it possible to use the lignin treatment with existing water filtration plants by adding the recovered lignin to the water in the mixing and sedimentation tanks, or applying it as the water enters the filters where activated carbon is used for odor removal at many plants throughout the country.

Hardness of Water in Georgia Supplies

WHAT is hoped will be only the first of a series of 48 studies of all the public water supplies of the United States by the Quality of of Water Division, U. S. Geological Survey, has just been partially completed. The study covering the dissolved solids and hardness of the water of Georgia was made by the Geological Survey in cooperation with the Georgia Division of Mines, Mining and Geology. It includes the study of the chemical character of the larger public water supplies, which has been made with the assistance of the State Department of Public Health. The quantities of dissolved solids and hardness for 65 public water supplies out of nearly 300 in the state, are given in a table in a recent release.

The state of Georgia has two major physiographic regions, the Appalachian Highlands and the Coastal Plain. The Highlands lie to the north, and the Coastal Plain to the south, of an irregular line passing through Augusta, Macon, and Columbus. Practically all the surface supplies studied are in the Appalachian Highlands, and nearly all the supplies from wells are in the Coastal Plain.

Most of the surface streams used as sources for the larger Georgia public water supplies furnish water that may be classed as soft or very soft. Waters low in hardness and dissolved mineral content are likely to be corrosive unless final treatment is given to prevent corrosion. For all surface supplies included in the report the water is filtered, and for most of them final treatment is applied to prevent corrosion.

In the Coastal Plain of Georgia practically all the water furnished by the larger public water supplies is obtained from artesian wells. These wells yield large amounts of water, and in many places one or two wells furnish the entire supply. Most of the water from the artesian wells is sufficiently hard to require softening for satisfactory use in the many industries which require a reasonably soft water for processing.

In general, the results given in the survey are taken from single analyses. The results for the raw water for a few of the surface supplies are from average analyses covering a period of a year. The dissolved mineral content and hardness of surface supplies will vary through the year. The dissolved mineral content and hardness of the finished water will also depend upon the operation and control of the treatment. For an artesian well, a single analysis is usually representative of the composition of the water from that well throughout the year. The composition of the mixed water from several artesian wells depends upon the dissolved mineral content of the individual wells and the proportion of the water used from each well.

BACKFILLING A WATER-MAIN TRENCH IN A CALIFORNIA ORANGE GROVE

Caterpillar diesel D4 tractor and Kay-Brunner Trail-builder backfilling for the Mutual Water Co., Escondido, Calif.

4 Layne WELLS & PUMPS FOR FIRESTONE TIRE & RUBBER CO.

WHEN the Firestone Tire & Rubber Company began construction of their Memphis plant, their first requisite was an ample and dependable supply of cool, clear and pure water. Their selection was a battery of three 500 feet deep Layne Gravel Wall Wells. A fourth has now been added as a reserve unit.

All four wells are of the Gravel Wall Underreamed Type, equipped with Layne Everdur Shutter Screen. Installed in each is a Layne Vertical Turbine Pump driven by a 40 H.P. motor. The combined capacity of the four units is over 7,000,000 gallons of water per day. The system was installed by Layne-Central Company, Memphis, Tennessee.

Thus Firestone Tire & Rubber Company, like many other leading manufacturers, has secured the very finest Water Supply System possible to obtain.

Whether for manufacturing or municipal use, Layne wells and Pumps are known to be highest in efficiency and lowest in operating and upkeep cost.

Our engineers will gladly cooperate on plans for reconditioning old or the construction of new Well Water Supply Systems. If you would like to receive our Bulletins, address

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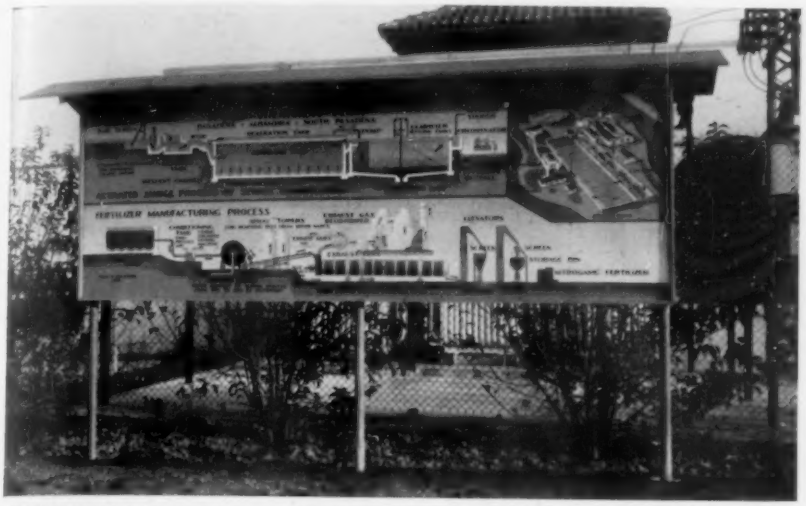
PUMPS & WELL WATER SYSTEMS

FOR MUNICIPALITIES • INDUSTRIES • RAILROADS • MINES AND IRRIGATION

When you write for that catalog, kindly mention THE AMERICAN CITY.

Sewage and Sewage Treatment



This Pictorial Presentation of Sewage Treatment and Fertilizer Manufacture at the Pasadena, Calif., Sewage Works Interests Both the Lay and the Technically-Trained Visitor. It Was Painted and Erected as a Relief Project

Clean-up Begins to Show Along Illinois River

"GIVE it back to the Indians," was the cry along the Illinois River about twenty years ago, as resigned residents of bordering cities held their noses and bemoaned the destruction of a stream which produced 21,000,000 pounds of fish commercially in 1908 and had become an open sewer by 1920.

In 1938, when it was apparent that The Sanitary District of Chicago was near the end of its great sewage-treatment works construction program, and when it was fully realized that the diversion of water from Lake Michigan would be reduced to but 1,500 cubic feet per second subsequent to January 1, 1939, the same people definitely evidenced a willingness to undertake their share of the restoration of the river. There was spontaneous cooperation from Illinois River municipalities downstream from Chicago when the State Sanitary Water Board asked for the installation of sewage-treatment facilities by those cities in April, 1938.

At the present time, Marseilles, Peru, Pekin, Havana and East Peoria have plants under construction, Lockport has begun construction, and Joliet, Rockdale, Morris, Ottawa, LaSalle and Oglesby have authorized bond issues and will proceed into construction as soon as PWA grants are made. Peoria and Depue have had sewage-treatment plants in operation for several years. Only at Lamont, Spring Valley and Beardstown has progress been unsatisfactory, and officials of those cities are endeavoring to work out local complications.

Why this unprecedented response? The fact that the people of these Illinois River cities had long suffered the consequences of stream pollution must be largely responsible for their readiness to do their part in restoration. Any pollution-control agency must first convince the people of a city causing pollution that treatment works are needed. Otherwise the citizenry will not authorize the necessary financing. Such explanations were not necessary along the Illinois River. Those folks had learned the evils of stream pollution the hard way!

Storm-Water Sewers in Stamford, Conn.

STORM-WATER construction under WPA projects in Stamford has been extensive. Included in the many such projects are more than 36,000 linear feet of trunk line and lateral drains, as well as several service connections and 188 manholes. Pipe used in this work varied, according to the need of each particular section, from 8-inch to 24-inch diameter for the trunk lines and from 4-inch to 24-inch for the laterals. A total 2,821 linear feet of new water mains, varying from 2- to 8-inch pipe, have also been installed in this program.

L. BROMFIELD,
Town Engineer.

Many Cities Get Power from Sludge Gas

A RECENT study of the use of sewage-sludge digester gas as a fuel for the operation of gas engines at sewage-treatment plants in the United States shows that there were 59 plants as of December, 1938, where such engines were installed, developing a total of 19,657 horsepower. In a discussion of this subject at a meeting of the Sanitation Group, A.S.M.E., an engineer of the Department of Sanitation, New York City, stated that before the end of 1939 there will be a total of 6,000 hp developed at the sewage-treatment plants in New York City alone.

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"We gotta open it again—we left a pick-ax inside last time"

E.F. DUGGER

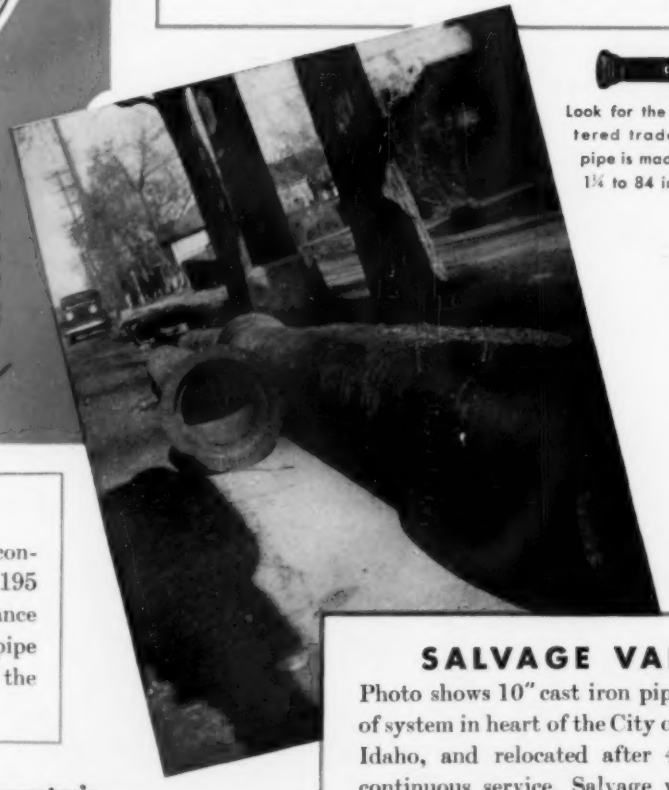
General Manager, Newport News, Virginia, Waterworks Commission and Former President of A. W. W. A.

Writes

"We have an 18" cast iron supply line 16 miles in length, approximately 50 years of age, on which the total repairs for the year 1938, covering labor and material, amounted to slightly less than $40 ($2.50 per mile). This cost for 1938 is a comparable figure for repairs since 1926 at which time I took charge of the system."

E. F. Dugger

LONG LIFE Here is an unretouched photograph of a cast iron water main now in its 100th year of continuous service to the citizens of Detroit, Michigan. In many of our older cities century-old cast iron pipe is saving taxpayers millions of dollars.



CAST Q IRON

Look for the "Q-Check" Registered trade mark. Cast iron pipe is made in diameters from 1¼ to 84 inches.

LOW MAINTENANCE is an economy feature of cast iron pipe that is not confined to Newport News. An impartial survey among 195 waterworks superintendents shows that the maintenance cost of cast iron pipe is *far below* that of any other pipe material which has been in use long enough for the recording of conclusive data.

SALVAGE VALUE Photo shows 10" cast iron pipe taken out of system in heart of the City of Pocatello, Idaho, and relocated after 43 years of continuous service. Salvage value is the final dividend of tax-saving cast iron pipe.

Water mains represent about one-third of this country's 5-billion-dollar investment in public water supply systems. More than 98% of these mains are cast iron pipe with a *known* useful life at least double the *estimated* life of other water main materials. Because the tax-saving, through deferred replacements alone, is enormous, cast iron pipe is known as Public Tax Saver No. 1.

THE CAST IRON PIPE RESEARCH ASSOCIATION, THOMAS F. WOLFE, RESEARCH ENGINEER, 1015 PEOPLES GAS BUILDING, CHICAGO, ILL.

CAST IRON PIPE

PUBLIC TAX SAVER NO. 1

Refuse Collection and Disposal

Charges for Collection of Refuse in Palo Alto

THE Board of Public Works of Palo Alto, Calif., in its service schedules published November, 1938, lists the monthly rates for refuse collection charged for single-family residences, flats, apartments and courts, and for business houses. The cost for single-family residences is a minimum of 65 cents per month for one collection per week. Then the charges increase to $1.00, $1.50 and $3.00 for two, three and six collections respectively per week. The table below shows the collection charges for flats, apartments and courts, for which the minimum charge is $1.00 per month:

	1st Apt.	Add. Apts.
1 collection per week	$0.65	$0.25
2 collections per week ...	1.00	0.30
3 collections per week ...	1.50	0.35
6 collections per week ...	3.00	0.40

A reduction of 70 per cent is made for apartment houses in which incinerators have been installed and which are maintained in good operating condition.

A flat monthly charge for business houses is made by the Board of Public Works, based upon the average amount of garbage and waste matter removed from each business house as shown by the inspector's check, based on cans of 30-gallon capacity. The estimate is based on the following schedule:

Per Month	Per Week	
1-16 cans	1 collection	$0.65
17-24 cans	2 collections	1.00
25-36 cans	3 collections	1.50
37-72 cans	6 collections	3.00

Any excess over 72 cans per month is estimated at the rate of 7 cents per can. One 30-gallon can and one ½-cubic-yard box of refuse is allowed for each regular collection.

What's Thrown Away and What It Costs

IT is surprising what people throw away and what has to be hauled away by the refuse man in any city. In Jacksonville, Fla., they know down to the last load just what is collected and how much it costs. Last year, 1938, for example, Jaxons threw away 6,230 truckloads of grass, 7,070 loads of brush, 4,652 loads of ashes, 3,946 loads of leaves, 689 loads of sand and 38,893 loads of garbage. But that wasn't all. They threw away 11 horses, 39 mules, 30 cows, 12 calves, 4,632 cats and dogs, 1 pony and 2 goats.

The city's Garbage Department, of which N. M. Ulsch is Assistant Superintendent, tells about all this in its annual report. There are pages and pages of figures and statistics and other data. One of the most interesting statements is that in 1938 the cost of garbage collection and disposal and street cleaning was 11 cents a ton less than in 1937. In 1938 the cost was $1.7675 a ton, while in 1937 it was $1.8775 a ton. The cost has been reduced in spite of the fact that the amount of garbage collected and disposed of has increased. The 1938 total was 127,811.59 tons, as compared with 103,213.71 tons for 1937.

Figuring it another way, the cost in 1938 was only 1.75 cents per day for each family for the three operations, which includes the collecting, hauling and disposal of garbage, grass, leaves, brush, sand, street sweepings, ashes and cans. For 1938, on a per capita basis, the cost was 13.25 cents per month for each person.

Profit Accrues from Refuse Collection

FOR the past seventeen years, the city of Berkeley, Calif., has handled its own garbage disposal successfully. To be sure that residents make use of the service, the ordinance provides that "any violation of this ordinance shall be deemed a misdemeanor punishable by a fine not to exceed $500 or by imprisonment not exceeding six months, or by both such fine and imprisonment. Every violator of the provisions of this ordinance shall be deemed guilty of a separate offense for every day such violation shall continue, and shall be subject to the penalty imposed by this section for each and every such offense."

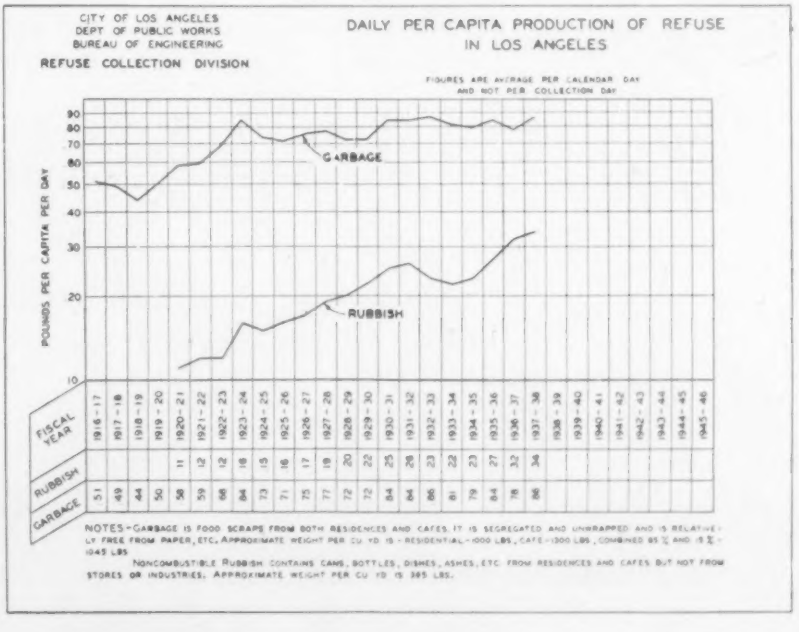
Each person having garbage service is charged direct, rates being based on the size of the container and frequency of collection. About 80 per cent of the bills are mailed and the remainder collected personally. During the fiscal year 1937-1938, the municipal system took in a total of $148,570.43; while operating expenses totaled only $119,869.92, leaving a profit of $28,700.51. The fact that this was not an exceptional year is shown by the fact that the Department has shown an average net profit of $25,000 during the past twelve years.

—From *The Street Cleaner*.

Industry Odors and Incinerator Odors

IN A discussion of objections to incinerators in *The Civic Searchlight* of the Detroit Citizens' League, Detroit, Mich., a very interesting question is raised. It seems that in Detroit official attention has been paid primarily to the organized complaints of people living in one neighborhood where it is proposed to erect an incinerator, thus presenting a decidedly one-sided argument; namely, that they do not want the incinerator in their locality because of the odors. The League asks: "Did you ever get a big whiff of noxious factory smells when you crossed Belle Isle bridge on a summer day?" The answer to the question is that many people probably did, but they did not promptly demand the removal of the factory. Such demands are voiced only when a municipal government adopts some change, on behalf of all the people, and then Democracy, subject to all sorts of pressure influences, has to take it on the chin.

The League Bulletin continues: "If the unorganized majority of Detroit citizens were fully informed of all the facts in this situation, perhaps the welfare of the entire city would be promoted, even though the political ambitions of some present objectors were at the same time discouraged." We urge all cities not to mix politics and the public welfare, whether it be schools, health, paving or incinerators.


CITY OF LOS ANGELES
DEPT. OF PUBLIC WORKS
BUREAU OF ENGINEERING
REFUSE COLLECTION DIVISION
DAILY PER CAPITA PRODUCTION OF REFUSE IN LOS ANGELES
FIGURES ARE AVERAGE PER CALENDAR DAY AND NOT PER COLLECTION DAY
POUNDS PER CAPITA PER DAY
GARBAGE
RUBBISH
FISCAL YEAR
RUBBISH
GARBAGE
NOTES - GARBAGE IS FOOD SCRAPS FROM BOTH RESIDENCES AND CAFES. IT IS SEGREGATED AND UNWRAPPED AND IS RELATIVELY FREE FROM PAPER, ETC. APPROXIMATE WEIGHT PER CU YD IS - RESIDENTIAL - 1000 LBS., CAFE - 1300 LBS., COMBINED 85 % AND 15 % - 1045 LBS.
NONCOMBUSTIBLE RUBBISH CONTAINS CANS, BOTTLES, DISHES, ASHES, ETC. FROM RESIDENCES AND CAFES BUT NOT FROM STORES OR INDUSTRIES. APPROXIMATE WEIGHT PER CU YD IS 385 LBS.

Three-Fold Fire Alarm Box Accessibly and Visibly Mounted on a Type U 1000-6 Pedestal

WRITE FOR CIRCULAR

PANAMA

the Gateway to Latin-America again selects the GAMEWELL Fire Alarm System

Increased population, values and the fire hazards incidental thereto, recently impelled the City of Panama to more than double the capacity of its public fire alarm system. After nearly 30 years' experience with its original Gamewell System, Panama again selected Gamewell to manufacture and install the new equipment—*and retained in service all of the old equipment installed in 1910, except the central alarm station.*

Gamewell principles of construction and workmanship are not borrowed and Gamewell's leadership in the field of fire alarm signaling has been earned by the service record of its products.

The Gamewell Fire Alarm System is a permanent investment in Public Safety.

Make the Three-Fold Fire Alarm System your city's "first line of defense against Fire!"

THE GAMEWELL COMPANY, NEWTON UPPER FALLS, MASS.

Public Safety

Fire Drills and Nozzles in Boston

ONE of the outstanding features of Fire Department activities in the city of Boston during the year 1938 was the construction of a portable drill tower 46 feet high, which can be erected in four hours and dismantled in two hours. This made possible public exhibitions of ladder, drill and rescue work in various sections of the city, and it is estimated that more than 200,000 persons saw the Fire Department at work in the drill tower in the various playgrounds of the city.

During the last year we purchased three Atlas life-nets, 16 additional Mine Safety All Service gas masks, 15 Elkhart nozzles, three Homelite portable lighting equipments, and 3 E.&J. resuscitators. An equal amount of the above will be purchased during the year 1939 and each succeeding year for at least three years.

The Elkhart nozzles furnished to land companies are being used not only in oil fires but in many other fires also, and I am told they have been used with success in many attic and cellar fires, at the same time reducing the loss due to water damage.

WILLIAM ARTHUR REILLY,
Fire Commissioner, Boston, Mass.

Fire Commissioner W. A. Reilly and Fire Chief Samuel J. Pope, of Boston

Radios Cooperate in Capture of Criminal

THE interconnected RCA police radio systems of two Illinois towns were recently used by a posse of Federal, county and municipal peace authorities to capture a heavily armed desperado wanted for murder and mail robbery. The capture was made at Normal, Ill., by U. S. postal inspectors, deputy sheriffs and municipal police summoned by means of the police radio systems of Normal and nearby Bloomington.

Parking Meters Help Duluth Police

ONE hundred and eighty parking meters of two makes, Dual and Park-O-Graph, were installed in Duluth October 1 for a probationary period of six months. Because the Police Department was undermanned it became necessary to resort to this method in order to enforce the parking ordinance. The public seems to approve the installation of these meters.

OSCAR G. OLSON,
Chief of Police, Duluth, Minn.

See
"Implementing Traffic Safety"
on page 7, this issue

Portable Emergency Lighting at Fires and in the Event of Disasters Is a Municipal Service of Prime Importance, and Is Strongly Featured on the Portland, Ore., Disaster Truck. *(See page 107, June Issue.)* *The Pictures Above Show the Truck's Batteries of Crouse-Hinds Floodlights and the Three Portable Homelite Electric Generators Which Power Them as Well as Spotlights and Emergency Surgery Lamps. Also Included in the Truck Equipment Is a 3-Inch Homelite Gasoline-Driven Pump*

Easy-Riding Streets from Gutter to Gutter — This Speed Maintainer enables Redmond, Oregon, to smooth its unpaved streets much oftener than ever before and at a fraction of former costs. Note free drawbar for pulling mowers, garbage trailers, tree spraying rigs and other tools.

Twice the Maintenance Rigs

. . . WITHOUT TAX INCREASES

Save Money and Keep More Streets Smooth by Using Speed Maintainers Instead of Heavier Rigs on Light Work

No longer need you neglect unpaved streets and alleys for lack of equipment. All your light maintenance work, usually handled by heavier grading outfits, can be done with Speed Maintainers. Yet these fast-moving rigs sell for so little you can buy 2 or 3 of them for the cost of one heavier unit, thus have plenty of equipment to smooth all your dirt streets . . . several times a month if necessary. You save all along the line . . . on depreciation, interest and insurance because first cost is about ⅓ to ½ of larger units . . . on operating costs because the Speed Maintainer uses but one gallon of gas hourly and requires only one man for operation. Handles most maintenance work at 3½ to 4¾ miles per hour . . . travels from one job to the next at 9 miles an hour. Has a blade pressure of 4080 pounds, yet is light enough to get on streets almost immediately after heavy rains.

Ask your Allis-Chalmers dealer to demonstrate. See for yourself . . . on your own city's streets . . . how you can keep more miles smooth without tax increases.

ALLIS-CHALMERS POWER

TRACTOR DIVISION — MILWAUKEE 1, U.S.A.

TRACTORS, ENGINES, ROAD MACHINERY

. . IT DOESN'T COST . . *it Pays!*

Vol. LIV, No. 7 The American City JULY, 1939

Civil Liberties and Municipal Powers—The Hague Case

By JOHN A. McINTIRE
Executive Director,
and
CHARLES S. RHYNE
Counsel,
National Institute of
Municipal Law Officers

CIVIL liberties of Americans with respect to free speech and assembly were considered by the Supreme Court of the United States in its decision of June 5, 1939, in the case of *Hague, Mayor of Jersey City v. C. I. O. et al.* The opinion by a divided court reflects sharp differences in approach to the fundamental problems involved.

The peculiar division of the justices makes impossible recognition of any one opinion as the authoritative pronouncement of the Court. The opinion of Justice Roberts concurred in by Justice Black is presented as the basis for the majority decision. The opinion of Justice Roberts finds that the ordinances of Jersey City and the administration thereof deny to the individual petitioners constitutional rights of freedom of speech and assembly. Justice Roberts in his opinion first considers the question of jurisdiction of the Court and in doing so distinguishes between the constitutional guaranty of free speech and assembly as applied to citizens of the United States and a claim for such privileges by non-citizens. The gist of his conclusion is that the Fourteenth Amendment, in the privileges and immunities clause, applies only to citizens so as to give them alone recourse to the Federal courts to seek protection under the Federal Constitution.

With respect to the substance of the major problem Justice Roberts distinguishes a prior decision of the Supreme Court in *Davis v. Massachusetts*, 167 U. S. 43 (1807), which had held that the city of Boston as owner of the Boston Commons could validly by ordinance prohibit any use of that park for assemblies, speeches, fireworks, displays or other purposes without a permit from a proper official. Without overruling this decision or expressly limiting it, Justice Roberts distinguishes it, first by indicating that the scope of the ordinance was broader than that of the enactments in question here, and that, irrespective of anything said in that decision, the right of the municipal authorities to regulate and control the use of parks and streets is not absolute, but relative. As his decision, he concluded that the individual citizens, in so far as they were prevented from holding assemblies, without permit, which could be withheld arbitrarily, for the purpose of discussing the National Labor Relations Act, were denied the privileges and immunities guaranteed to them by the Fourteenth Amendment.

Justice Stone, in his separate concurring opinion, joined in by Justice Reed, takes a broader view of the problem. He, too, faces the question of jurisdiction, but by a process of analysis of Federal legislation and constitutional amendments, finds that the constitutional protection of freedom of speech and assembly is not confined to the remedies available for protection of citizens under the privileges and immunities clause of the Fourteenth Amendment. His view is that the question comes within the spirit and meaning of the Due Process Clause of the Fourteenth Amendment and that these civil liberties are guaranteed to all natural persons.

The Chief Justice indicates his agreement with the result reached by the majority of the Court and a preference for the broad approach of Justice Stone.

The point of disagreement between the majority of the Court as to result and the dissenting justices is, in effect, the interpretation of the *Davis case* doctrine as applied to the question in the *Hague case*. The dissenting justices are of the opinion that the *Davis case*

WHERE TO DRAW THE LINE?

When the Justices of the Supreme Court of the United States require several separate opinions to express their interpretation of constitutional rights of free speech and assembly as affected by municipal powers and duties, the complexity of the problem is manifest. The important decision here interpreted, while helping to reestablish certain fundamental privileges in cities where their exercise had been threatened, does not give as definite a guide as might have been hoped as to how far local governments can go—and ought to go—in preserving a proper balance between civil rights and public order and convenience. For a brief statement of the previous findings of the District Court in this Jersey City case, see bottom of next page.

should control and that, generally speaking, matters of local regulation of local assembly, use of local parks and streets, etc., should not be a usual subject for Federal inquiry.

The most important pronouncements in this decision by the Supreme Court from the point of view of local officials is the recognition that the control of assemblies, speech, distribution of printed matter, etc., in municipal parks and streets is a relative matter which must be viewed from the standpoint of reasonable exercise of the local police power for the benefit of the community as distinguished from an arbitrary suppression of individual rights. The Court does therefore recognize the necessity for and validity of reasonable regulations and restrictions in proper cases on the exercise of such individual liberties in a community.

The other matter of importance is the interpretation, effectively limiting the doctrine of the *Davis case* in spite of the failure of the Court to so declare. In this connection the Court stated that, regardless of the question of the nature of ownership of public parks or streets by the municipal authority, even an absolute ownership does not carry with it an absolute power *arbitrarily* to exclude or limit the use of such property by individuals as members of the public.

The distinction between the application of the Fourteenth Amendment to citizens with respect to privileges and immunities and to non-citizens under the Due Process Clause, while a point of disagreement between the Justices, is a matter of more far-reaching social significance with respect to the broad question of civil liberties.

The Supreme Court recently passed upon the question of freedom of the press in the case of *Lovell v. City of Griffin* 303 U. S. 444, 58 Sup. Ct. 666, 82 L ed. 949 (1938). *Hague v. C. I. O. et al* is its next pronouncement in this field since that case, and undoubtedly forecasts the attitude of the Court with respect to a series of similar questions which it will be called upon to consider at the next term particularly with reference to local control of handbill distribution. The cases which have been docketed in the United States Supreme Court on this subject are:

Young v. People of California, case No. 13 (Los Angeles ordinance, decision below 85 P. (2d) 231); *Snyder v. City of Milwaukee*, case No. 18 (Milwaukee ordinance, decision below 283 N. W. 301); *Nichols v. Massachusetts* (Worcester ordinance, decision below 18 N. E. (2d) 166).—Compare *Schneider v. New Jersey*, case No. 11 (Irvington ordinance requiring permits for canvassers).

How Jersey City Had Attempted to Prevent Public Meetings and Pamphlet Distribution

THE so-called Hague case, discussed in the previous article, before being appealed to the Supreme Court of the United States had come before the Circuit Court of Appeals for the Third Circuit. In the case before this District Court the *respondents* were individual citizens, unincorporated labor organizations and the American Civil Liberties Union. The *petitioners* were the Mayor, the Director of Public Safety, the Chief of Police and the Board of Commissioners of Jersey City, N. J.

The bill alleged that, acting under a city ordinance forbidding the leasing of any hall, without a permit from the Chief of Police, for a public hearing at which a speaker shall advocate obstruction of the government of the United States or a state, or a change of government by other than lawful means, the petitioners, and their subordinates, had denied respondents the right to hold lawful meetings in Jersey City on the ground that they are Communists, or Communist organizations; that pursuant to an unlawful plan the petitioners had caused the eviction from the municipality of persons they considered undesirable because of their labor organization activities, and had announced that they would continue to do so.

It further alleged that, acting under an ordinance which forbids any person to "distribute or cause to be distributed or strewn about any street or public place any newspaper, paper, periodical, book, magazine, circular, card or pamphlet," the petitioners had discriminated against the respondents by prohibiting and interfering with distribution of leaflets and pamphlets by the respondents while permitting others to distribute similar printed matter; that, pursuant to a plan and conspiracy to deny the respondents their constitutional rights as citizens of the United States, the petitioners had caused respondents, and those acting with them, to be arrested for distributing the printed matter in the streets, and had caused them, and their associates, to be carried beyond the limits of the city or to remote places therein, and compelled them to board ferry-boats destined for New York; had, with violence and force, interfered with the distribution of pamphlets discussing the rights of citizens under the National Labor Relations Act; had unlawfully searched persons coming into the city and seized printed matter in their possession; had arrested and prosecuted respondents, and those acting with them.

In brief, the District Court found that the purposes of respondents, other than the American Civil Liberties Union, were the organization of unorganized workers into labor unions, causing such unions to exercise the normal and legal functions of labor organizations, such as collective bargaining with respect to the betterment of wages, hours of work and other terms and conditions of employment, and that these purposes were lawful; that the petitioners, acting in their official capacities, had adopted and enforced the deliberate policy of excluding and removing from Jersey City the agents of the respondents; had interfered with their rights of passage upon the streets and access to the parks of the city; that these ends had been accomplished by force and violence despite the fact that the persons affected were acting in an orderly and peaceful manner; that exclusion, removal, personal restraint and interference, by force and violence, were accomplished without authority of law and without promptly bringing the persons taken into custody before a judicial officer for hearing.

The Court further found that the petitioners, as officials, acting in reliance on the ordinance dealing with the subject, had adopted and enforced a deliberate policy of preventing the respondents, and their associates, from distributing circulars, leaflets, or handbills in Jersey City; that this had been done by policemen acting forcibly and violently; that the petitioners proposed to continue to enforce the policy of such prevention; that the circulars and handbills, distribution of which had been prevented, were not offensive to public morals, and did not advocate unlawful conduct, but were germane to the purposes alleged in the bill, and that their distribution was being carried out in a way consistent with public order and without molestation of individuals or misuse or littering of streets.

It was from these findings of the District Court that appeal was made to the United States Supreme Court.

Instead of Random Notations on Scraps of Paper, the Brooklyn Water Bureau Has a

System for Handling Customer Complaints

Mr. Eastmond noted the article, "Handling Complaints," in the January, 1939, issue of THE AMERICAN CITY, *by G. E. Wright, City Engineer and Superintendent of Public Works, Corning, N. Y. Believing in the system he instituted in Brooklyn some time ago when he consolidated all the Repair Departments into one headquarters for the entire borough, Mr. Eastmond has sent us this article describing the system he uses in handling complaints in all Bureaus of his Department in Brooklyn.*

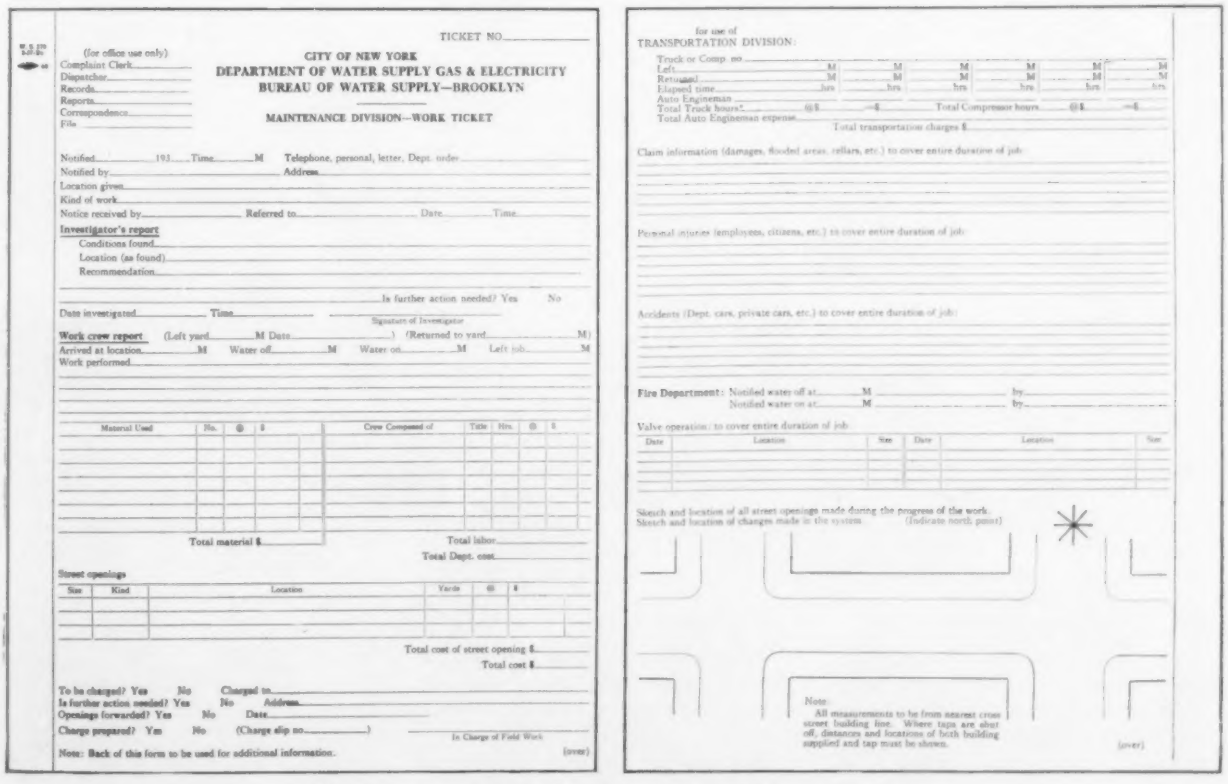
By JOHN E. EASTMOND
Deputy Commissioner, Department of Water Supply, Gas and Electricity, New York City

INSTEAD of having scattered notes on complaints received from consumers and others, we have consolidated all information on a Work Ticket which has the entire history of the complaint, as well as the complete cost record of the entire job, so that when, as frequently happens, we are called into court to testify in some case, we have the authentic record of everything affecting that particular complaint. This Work Ticket has been the result of a rather complete reorganization of the Bureau since 1935.

Consolidation

Prior to 1935, each of the five boroughs of New York City was divided into districts by the Department of Water Supply, Gas and Electricity, for the functional purposes of the Maintenance Division of the Bureau of Water Supply of that Department. Each of these districts had a full complement of men to cover three watches, together with such motor-vehicle equipment as was considered necessary to operate in accordance with the size of the district and the number of personnel assigned to it.

On January 5, 1935, an order was issued for the consolidation of all the Maintenance Districts and Repair Yards in the borough of



TICKET NO.

(for office use only)
Complaint Clerk
Dispatcher
Records
Reports
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File

CITY OF NEW YORK
DEPARTMENT OF WATER SUPPLY GAS & ELECTRICITY
BUREAU OF WATER SUPPLY—BROOKLYN

MAINTENANCE DIVISION—WORK TICKET

Notified 19 Time M Telephone, personal, letter, Dept. order
Notified by Address
Location given
Kind of work
Notice received by Referred to Date Time

Investigator's report
Conditions found
Location (as found)
Recommendation
Is further action needed? Yes No
Date investigated Time
Signature of Investigator

Work crew report (Left yard M Date) (Returned to yard M)
Arrived at location M Water off M Water on M Left job M
Work performed

Material Used	No.	@	$	Crew Composed of	Title	Hrs.	@	$

Total material $
Total labor
Total Dept. cost

Street openings

Size	Kind	Location	Yards	@	$

Total cost of street opening $
Total cost $

To be charged? Yes No Charged to
Is further action needed? Yes No Address
Openings forwarded? Yes No Date
Charge prepared? Yes No (Charge slip no)
In Charge of Field Work

Note: Back of this form to be used for additional information. (over)

for use of
TRANSPORTATION DIVISION:

Truck or Comp. no
Left M M M M M M
Returned M M M M M M
Elapsed time hrs hrs hrs hrs hrs hrs
Auto Engineman
Total Truck hours* @$ =$ Total Compressor hours @$ =$
Total Auto Engineman expense
Total transportation charges $

Claim information (damages, flooded areas, cellars, etc.) to cover entire duration of job:

Personal injuries (employees, citizens, etc.) to cover entire duration of job:

Accidents (Dept. cars, private cars, etc.) to cover entire duration of job:

Fire Department: Notified water off at M by
Notified water on at M by

Valve operation: to cover entire duration of job

Date	Location	Size	Date	Location	Size

Sketch and location of all street openings made during the progress of the work.
Sketch and location of changes made in the system. (Indicate north point)

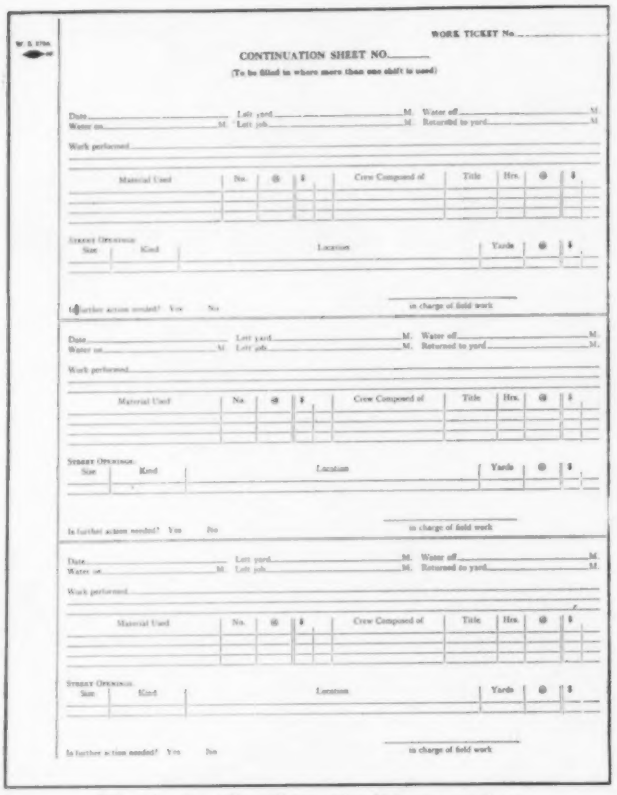
Note:
All measurements to be from nearest cross street building line. Where taps are shut off, distances and locations of both building supplied and tap must be shown.

(over)

The Front and Reverse of the Work Ticket on 8½ x 11-Inch Sheet

Brooklyn, which covers an area of 81 square miles. At that time there were in the borough of Brooklyn three districts; one district, known as the Williamsburg or Berry Street district, had been combined with the East New York District on April 7, 1934. There were then yards at Butler Street, and at Coney Island and at East New York, together with a machine shop and a motor-vehicle repair shop at North Portland Avenue.

Since we were unable to have a new building erected for a Brooklyn Borough service station covering the entire territory, we negotiated with the Department of Sanitation and secured what was known as "Stable A," a building erected some thirty-odd years ago for the old Street Cleaning Department when that Department contained no motor vehicles. This building was completely rehabilitated and all the equipment from the various districts and yards was brought together under one roof. The machine shops were also consolidated, those from North Portland Avenue and at Ridgewood being brought into the central depot, so that now we have in Brooklyn one of the finest machine shops of its size in the country, with individual motors for each machine.



WORK TICKET No. _____

CONTINUATION SHEET NO. _____

(To be filled in where more than one shift is used)

Date _____ Left yard _____ M. Water off _____ M.
Water on _____ M. Left job _____ M. Returned to yard _____ M.

Work performed _____

Material Used	No.	@	$	Crew Composed of	Title	Hrs.	@	$

Street Openings: Size | Kind | Location | Yards | @ | $

Is further action needed? Yes No

in charge of field work

Date _____ Left yard _____ M. Water off _____ M.
Water on _____ M. Left job _____ M. Returned to yard _____ M.

Work performed _____

Material Used	No.	@	$	Crew Composed of	Title	Hrs.	@	$

Street Openings: Size | Kind | Location | Yards | @ | $

Is further action needed? Yes No

in charge of field work

Date _____ Left yard _____ M. Water off _____ M.
Water on _____ M. Left job _____ M. Returned to yard _____ M.

Work performed _____

Material Used	No.	@	$	Crew Composed of	Title	Hrs.	@	$

Street Openings: Size | Kind | Location | Yards | @ | $

Is further action needed? Yes No

in charge of field work

The Continuation Sheet, Also 8½ x 11 Inches

The Work Ticket

Prior to the consolidation of the districts and yards, whenever a complaint was received, a notation was made in such manner as seemed most convenient to the foreman or clerk in the yard office. These complaints were recorded in various sizes and kinds of books, some in pencil and some in ink and even on scraps of paper that were handy. There were no exact data kept on all phases of the complaint from the time it originated to the time it was corrected and the job completed. Very often during testimony in court on matters concerned with complaints, the records of the Department were subpoenaed, and the question as to the time and nature of complaints and what was done with respect to them was largely a matter of guesswork and wholly unsatisfactory from the point of view of the Department and of the Court which was trying to ascertain the facts.

For these reasons, a form of Work Ticket was devised. These were first mimeographed and then photo-printed, and later put in regular printed form, as reproduced here, in the Work Ticket and the Continuation Sheet which goes with it.

Now, when there is a question about a complaint or a job, we have complete data concerning it with the names of all the responsible persons connected with the work, as well as an itemization of the costs. We go very carefully into the matter of claim information, so that when case claims arrive later from an alleged damage due to flooding or other causes, we have something we can depend upon as a record.

We also go into the question of personal injuries, either to employees or to citizens who are in any way concerned with the particular job reported on the Work Ticket. Further, we make a careful report of accidents to motor vehicles if they are in any way concerned with the job in question.

A very important consideration is the Fire Department. Under this heading on the Work Ticket we show when the water was cut off and when it was turned on again, and the name of the person who operated the valves, so that there is no question at any time as to who is responsible for any action taken by the Department of Water Supply, Gas and Electricity. The sketch diagram at the bottom and on the back of the Work Ticket, showing locations, is of the greatest value to the Department and in court.

The Continuation Sheet is necessary on a job when the work is extended over a considerable period, and by having one or more of these sheets attached to the Work Ticket the full information about the complaint or job is kept as a unit.

I am not oblivious of the fact that there may be objections by some persons to the use of such a Work Ticket. The possible reason for its non-use is not that it is not desirable, but that if such a ticket system is maintained, certain derelictions are difficult to conceal, and certain information, the record of which does not always look good on paper, would be immediately available to department heads, particularly as these Work Tickets are permanent files of the Borough Office.

Mayor LaGuardia Wins "Fortune"

Not a sweepstake prize, but a 9-page article in the July issue of *Fortune*, the heading of which reads:

"Mayor LaGuardia's New York: In size and cost his government is second only to the Federal. He runs it with a showman's flair, a businessman's eye, a politician's astuteness. Annual budget: $600,000,000.

Manual System—

500 Fire Alarms

By WILBUR OLSON
Electrical Superintendent,
Bloomfield, N. J.

IN 1930, when the city of Bloomfield incorporated within it certain developing farmlands, it was evident that the automatic fire-alarm system, though only eleven years old, would no longer furnish adequate protection. The City Council and the public were confronted with the questions:

Shall the present system be enlarged?

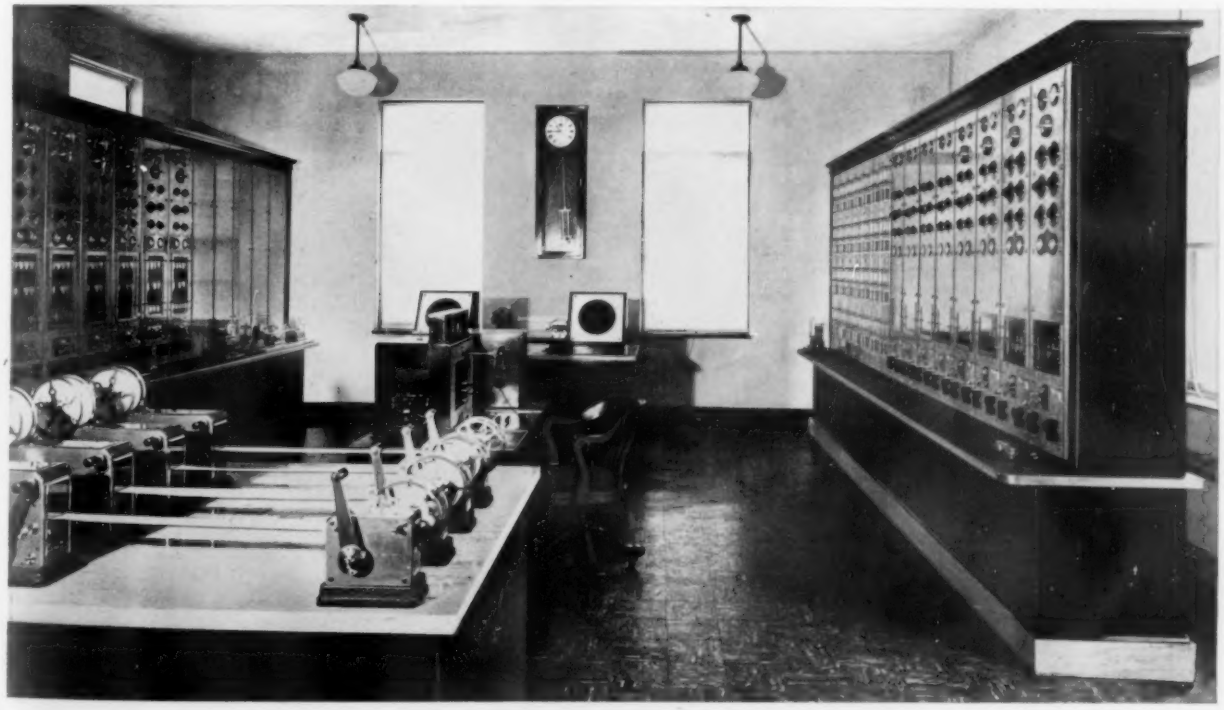
Shall a new and better system be installed?

The final decision made was to install a Gamewell manual threefold fire-alarm system. In 1932, a new fire headquarters building was erected, with a separate fire-proof alarm-headquarters building on the same plot. The equipment has available five sources of power—two services from Public Service Electric Co., an illuminating-gas-engine generator, which can also be run by batteries, and the 636-ampere 72-volt Exide batteries.

Under normal conditions, alarms are transmitted over closed metallic circuits; but there are quite common circumstances which can disrupt these circuits, such as box pedestals broken by traffic collisions or manhole explosions, defective insulation on wires from boxes to main signal line, circuit crossed by electric power system. The threefold fire-alarm box, unless entirely disconnected from the fire-alarm central station by a number of breaks or grounds, will transmit alarms, and central will receive them even if there should develop (1) an open circuit, (2) a grounded circuit, (3) a short-circuit of the box, (4) the entire circuit shunted out or open or grounded, (5) the circuit open and box short-circuited, or other circuit troubles. In the central station, the switchboard, which is of the dead-front type, is designed for simplified operation. The photograph shows the operating panels for 24 circuits, with space for 5 additional circuit panels, and a general view of the operating room.

With the manual system, by which the incoming alarms are checked and then sent out to the fire stations, any trouble that does develop on the line is caught at headquarters. For instance, a year ago one man pulled nine boxes in thirteen minutes. With an automatic system, these nine alarms would have come in and gone out to the stations automatically, and all the fire-houses would have been stripped of apparatus and the city of fire protection. With our manual system, it speedily became evident that something was wrong, and the police, instead of the apparatus, were dispatched.

Up to date, a total of 128 boxes, all of the Gamewell threefold type, have been installed; these fairly well cover all the occupied territory. Bloomfield, however, is growing rapidly and four to six boxes must be installed yearly in new territory. To better handle the average of 500 alarms yearly, many of which are received by telephone, 832 "phantom" box locations have been designated.



Operating Room of Bloomfield's Threefold Central Fire-Alarm System

Skyscrapers in 1960 Are So Spaced That the Shadow of One Does Not Fall on Another. The Bases of the Taller Buildings Occupy a Full City Block. Setback Levels Are Terraced and Gardened. Many Buildings Have Landing Roofs for Airplanes and Autogyros. Parks Occupy One-Third of the Total City Area

"The Magic City of Progress"

Crowds far bigger and more thrilled than have ever been attracted by any other exhibition of city and regional planning are daily visiting the General Motors Highway and Horizons Exhibit at the New York World's Fair.

Somewhat fantastic, perhaps, in its models of seven-lane one-direc-

Between the Cities of 1960 Are Ample Open Spaces Traversed by Well-Planned Highways

tion highways, four-level streets and bridge approaches, and quarter-mile high glass-sheathed skyscrapers, this vision of 1960 has much which the conservative planner of 1939 will endorse. Producing the highest type of publicity for its sponsor, the General Motors exhibit is also interesting the American people as never before in the planning and building of highways and communities for the motor age.

Typical scenes of 1960, in city and region, as visualized in the 35,738-square-foot "Futurama" by Norman Bel Geddes, are reproduced on this and the facing page and on the front cover of this issue of THE AMERICAN CITY. And here are some quotations from the spoken words which are skilfully synchronized for each spectator with the section of the display before which he is passing:

"This superb one-direction highway, with its seven lanes accommodating traffic at designated speeds of 50, 75 and 100 miles an hour, is engineered for easy grades and for curves that require no reduction in speed. Cars from the farm roads and feeder lanes join the Motorway traffic at the same speed as cars traveling in the lane they enter. To insure safety, the various lanes are safeguarded by border separators and grass stripping. . . .

"By means of the ramped loops, cars may make right and left turns at speeds up to 50 miles per hour.

"The highway surface is automatically lighted by continuous tubing in the highway safety curbing, which evenly illuminates the road surface. . . .

"Whenever possible, the rights-of-way of these express city thoroughfares have been so routed as to displace outmoded business sections and undesirable slum areas. . . .

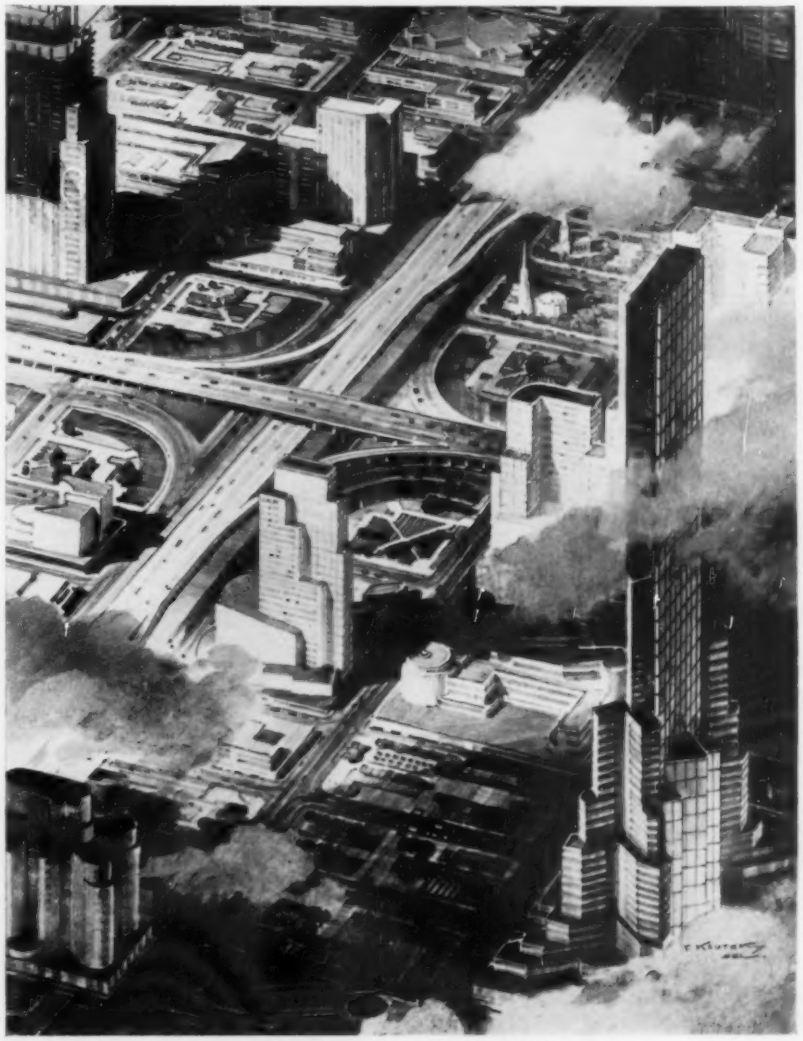
"The city of 1960 has abundant sunshine, fresh air, fine green parkways, recreational and civic centers—all the result of thoughtful planning and design . . .

"Modern and efficient city planning—breath-taking architecture . . . space, sunshine, light and air. . . .

"Who can say what new horizons lie before us if we but have the initiative and imagination to penetrate them—new economic horizons—new social horizons—new horizons in many fields, leading to new benefits for everyone, everywhere!"

The "Futurama," the largest and one of the most lifelike models ever designed, was constructed by George Wittbold Studios.

A Multi-Deck Bridge of the Future and Its Approaches So Designed as to Permit Uninterrupted Traffic Flow



In the Heart of a 1960 Metropolis

Louisville Combines

By E. F. SCHIMPELER
Engineer of Construction, Department of Public Works, Louisville, Ky.

Unloading Steam-Heated Rock Asphalt by Hand

THE city of Louisville, Ky., like many other cities, is continually faced with a problem of street repair and reconstruction, the financing of which is a direct responsibility of the city government, due to the fact that property owners can be assessed only once for paving, this being done on the original construction of streets.

An earnest effort is being put forth to reduce the general repair cost and to increase the yardage of reconstruction. By doing this we can eliminate the costly minor repairs, which are of temporary benefit only, and utilize that money to reconstruct old streets and place them in a condition that will minimize the cost of repairs over a period of years.

Reconstruction Needed

Since much of our street paving is at least fifty years old, having been laid in the period of 1875-1890, it is natural to expect that it is now in dire need of reconstruction. In addition to normal wear, much of the pavement has been torn up from time to time for the placing and maintenance of drains, conduits, and other utilities, and about two-thirds of the street surfaces have been in some measure damaged by floods, the last of which was in 1937, covering many streets to a depth of 8 feet.

The city of Louisville has sponsored relief projects to improve the general appearance and sanitary condition of the city by enlarging drains, installing new sewer lines, grading and reconstructing streets, and paving sidewalks. From the very beginning, every endeavor was made to secure work of high quality and minimum cost. Under the proper supervision each relief worker was encouraged to give an honest day's work, enabling the city to secure a high quality of work which we believe is equal in quality to contract work; and, also, labor did not refuse outside employment when the opportunity arose. This made possible a smaller relief roll than existed in many cities of equal population.

Reconstruction Begun

In the fall of 1938 the city of Louisville sponsored a project for the reconstruction of several city streets to embrace approximately 200,000 square yards of resurfacing, curb and gutter rebuilding, manhole and catch-basin resetting, and the rounding of old square-cornered curbs, the total cost of this to be $400,000. This project was approved in October, 1938, and work was begun in the same month.

It was first planned to use hand labor throughout the entire job, but following a careful check-up it was deemed advisable to alter slightly this method of procedure. The final arrangement agreed upon was to use relief labor for all work preparatory to actual resurfacing. This work consisted of reshaping the old base, raising the manholes, resetting and rebuilding curbs and gutters, raising sidewalks, catch-basins and the other minor preparatory work.

Economy of Machine Finishing

In placing the binder and wearing surfaces, a Barber-Greene Bituminous Finisher is being used. It was found that by using this machine a much higher quality riding surface could be obtained and a neater job could be had, especially as only unskilled labor would have been available to place the surface by hand.

The finisher makes it possible for the city to save as high as 10 per cent on the amount of binder material necessary to build up the base to a surface even with the high spots. This is due to the machine's ability to tamp and level the material simultaneously. If the material were merely struck off at the correct level, the subsequent rolling would compact it to different thicknesses, thus reflecting the subgrade irregularities. The fact that this machine tamps and levels simultaneously, however,

Spreading, Tamping and Leveling a Surface Course

Hand and Machine Finishing in Street Reconstruction

gives a uniform density. Over subgrade irregularities as great as 3 to 4 inches, the finished base showed variations of less than ⅛-inch in 16 feet.

The finisher is used to place the main sections of the street. The machine can pave up to the curb, but a 2-foot strip is being retained for hand labor, so that a minimum number of men will be replaced by the use of the machine. A happy medium is being reached by the employment of additional labor to load trucks at the railroad cars and to keep the finisher running.

Two types of wearing surfaces are now being employed, namely: sheet asphalt furnished on contract by the Bituminous Materials Co., of Louisville, which also furnishes all binder material for both types of wearing surfaces; and the second type surface material, Kentucky processed rock asphalt, which is furnished on contract by the Ohio Valley Rock Asphalt Co., of Louisville.

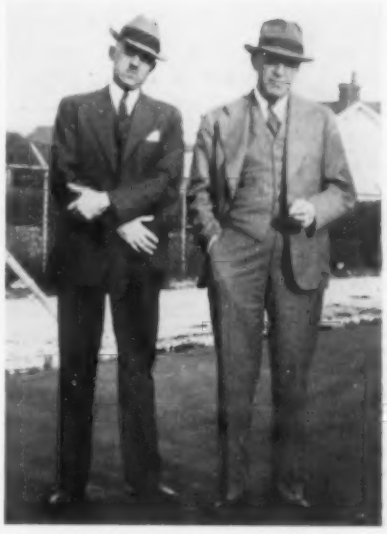
Binder Course

On all the resurfacing work a sheet asphalt binder course having aggregate ¾-inch and smaller is first placed. This course is placed more as a leveling course than for a base. The binder course is placed at a rate of approximately 80 pounds per square yard. The depth is not uniform owing to the extreme irregularity of the subgrade. The binder course thickness varies from an inch or more in some places to zero in others. It is here that the finisher is able to do its most valuable work, because of its leveling ability.

The base is of old macadam pavement, along with considerable brick and old sheet asphalt, all of which furnish an excellent base for resurfacing. After all preliminary work has been performed, the binder course is laid and rolled.

Surface Course

Following the binder, the surface course of sheet asphalt or processed rock asphalt is laid. The sheet asphalt and binder are both mixed at a local plant which has a capacity of approximately 50 tons per hour. The processed Kentucky Rock asphalt is delivered f.o.b. Louisville in gondola cars. It is heated in these cars to a temperature of 200° F. before it can be easily unloaded and used. The heating is accomplished by thrusting several steam pipes into the pile of material in the car. These pipes are open on one end to allow the condensed steam to escape. A 50-hp boiler is used to generate steam for this heating element. The material is loaded from the cars into trucks by hand, and it is then hauled to the finisher. The material is placed at a temperature of about 180° F. The heated screed on the finisher aids in giving a uniform finish and also in taking out practically all moisture that is introduced by steam heating.

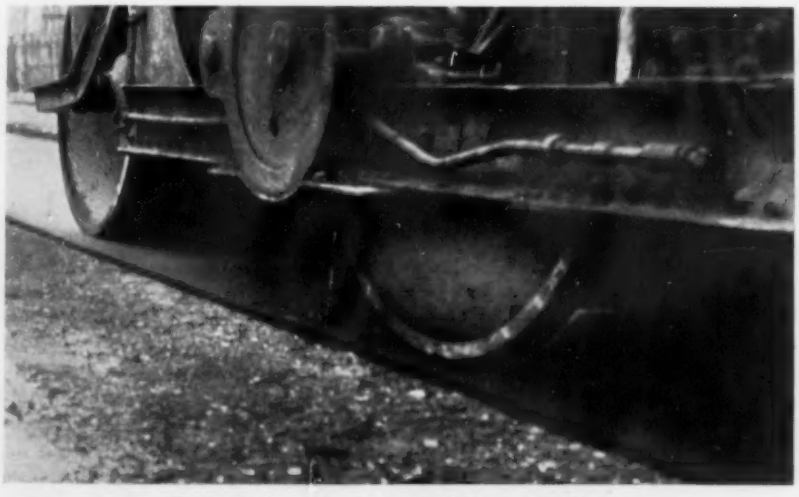


R. W. Burke, Director of Public Works, Louisville, at Right, and the Author

The sheet asphalt is placed at a temperature of 300-325° F. The same finisher is used to place both the sheet and the rock asphalt. The finisher is laying a mat only ¾-inch compacted thickness, 75 pounds per square yard, and is able to handle consistently over 50 tons per hour and give highly satisfactory results. The sheet asphalt used by the city of Louisville conforms to the specifications of the Asphalt Institute, with only a few variations in the aggregate gradation.

The rock asphalt is a grade of processed Kentucky rock asphalt, which is produced according to the specification formula of the Ohio Valley Rock Asphalt Co. This processed rock asphalt is being used

(Concluded on page 73)



Finish Rolling a Section of Hot Sheet Asphalt Top

The Use of Property Ledgers in City Departments

Forms Covering the Expected Life, Depreciation, Repairs and Maintenance of City Equipment

By Harold B. Gotaas

Department of Sanitary Engineering, University of North Carolina

Sound management of such municipal utilities as water, light, power, gas and other services, operated on a distinct revenue basis, necessitates careful analysis of the various costs. The property ledger provides an efficient means for keeping a record of the physical plant and the various hidden costs.

The property ledger is an account for a unit of property or groups of similar units of property which may be combined for accounting purposes and dealt with as a unit. The ledger contains information concerning the expected life, the depreciation, repairs and maintenance, the description of the unit and operation data.

Accountants have been held responsible for a record of the money transactions — cash receipts and disbursements — and have developed accounting procedures with breakdown and subaccounts so that a record of the actual plant funds can be kept to the last cent. Many municipalities, however, do not have records concerning the conditions not yet reflected in cash transactions, changes in the capital assets due to replacements and depreciation, or records providing information on the cost of repairs, maintenance, and operation of specific items of equipment.

Property ledger accounts are also essential for the efficient management of such functions as maintenance of sewers and drains, streets and alleys, waste collection and disposal, fire protection and other municipal undertakings carried on with money provided through taxation.

Unit - 200 H.P. Water Tube Boiler Manufacturer - A-B-C Company
Dept't. - Power Mf'rs. Type & No. 15 F-H No. 355
Plant No. 2 Purchased from A-B-C Company

Date	Repairs: Description	Repairs: Cost	Depreciation: Date	Age / Prob. Life	Cond. %	Present Value	Depr. Reserve	Annual Depr.
	Cost new Del.	$7000		/20	100	8868		
	Installation	1868						
	Est. salvage value	0						
	Depr. value	$8868						
			12/31/16	1/20	95	8424.60	443.40	443.40
			12/31/17	2/20	90	7981.20	886.80	443.40
			12/31/18	3/20	85	7537.80	1330.20	443.40
			12/31/19	4/20	80	7094.40	1773.60	443.40
			12/31/20	5/20	75	6651.00	2217.00	443.40
			1/1/21	5/18				
			12/31/21	6/18	69.23	6139.40	2728.60	511.60*
			12/31/22	7/18	63.96	5627.80	3240.20	511.60
			12/31/23	8/18	57.69	5116.20	3751.80	511.60
			12/31/24	9/18	51.92	4604.80	4263.20	511.60
			12/31/25	10/18	46.15	4093.20	4774.80	511.60
			12/31/26	11/18	40.38	3581.60	5286.40	511.60
			1/1/27	11/17				596.93
			12/31/27	12/17	33.65	7984.47	5883.33	
			12/31/28	13/17	26.92	2387.74	6480.26	596.93
			1/1/29	13/16				795.91
			12/31/29	14/16	17.95	1591.83	7276.17	
			12/31/30	15/16	8.98	795.92	8072.08	795.91
	Retired 11/1/31							745.92
12/31/31	Net salvage	$50.00	12/31/31	16/16	0.00	50.00	8818.00	

Enter date of repairs | Enter repairs as they are made | Enter cost of repairs

* The deficit in the depreciation reserve due to the change in the estimated probable life has been prorated thruout the future life of the unit. This makes the condition percent of the unit larger than that given by dividing the expected future service by the probable life.

Form 1. Loose-Leaf Property Ledger

Capital Accounts and Continuous Inventories

The utilities are unlike other businesses in that they deal daily with capital accounts. Each time a new water or electric service is put in, a meter installed, or a sewer line extended, the capital account is increased. Likewise, each time a worn-out meter is discarded or a service

abandoned, the capital account is decreased. The capital account is also decreased owing to depreciation of the various units of property.

Every municipality should have an inventory of all the physical property it owns. The physical property ledgers provide a continuous inventory—always up to date, covering all items of property.

Building up a property inventory and recording data concerning physical property divides itself into two main sections, one pertaining to existing property and the other covering new construction.

Obtaining information on existing property is not an easy task. In many cases only personal recollection is available for the determination of facts about physical property. Sometimes, data from manufacturers and supply houses will indicate the approximate cost and value of various items. Often property ledger accounts for existing property can be made only by estimation.

Property data for new construction implies a more detailed record, and in most cases the information will be derived from the contract cost, or the work orders where the work was done by the municipality. With only a little additional effort, the cost data may be itemized. Such records provide a reliable source of unit costs for future estimates.

(Front side of card)

Class of Equipment _____ Unit _____
Dept. _____ Mfd. by _____
Purchased from _____ Mfrs. Type & No. _____

Record of Repairs			Record of Repairs		
Date	Nature of Repairs	Cost	Date	Nature of Repairs	Cost

(Reverse side of card)

Time used or output record

Date	Item	Cost Del.	Install. Cost	Total Install. Cost	Depreciation				
					Age / Prob. Life	Cond. %	Annual Depr.	Depr. Reserve	Present Value

Form 2. Loose-Leaf Property Ledger

Rate Making

In non-governmental or revenue-producing businesses of a city which require physical property, the plant values together with depreciation and operation expenses form the basis for the determination of the rate to be charged for a particular service. The scientific determination of rates requires that accurate accounts be kept of various individual costs which contribute in varying degrees to the total cost of producing a particular service. It is always necessary to know the value of the property in determining whether a business is operating at a profit or a loss.

Regulatory commissions in some states have jurisdiction over publicly owned utilities to the same degree as over privately owned utilities. Under this arrangement all utilities are required to maintain a record of the value of the property owned. The property must be classified and costs recorded for each class.

Depreciation

Everyone is no doubt familiar with the school of thought which maintains that annual depreciation should be considered as some more or less arbitrary composite percentage on the value of an entire plant rather than the individual application of a percentage obtained from mortality data to each item or group of like items. Arbitrary composite depreciation does not accurately protect the investment or provide detailed and reliable information for rate making. The problem of depreciation can in actual practice be most efficiently handled by first making an analysis of the units which make up the plant, based upon their use, value and longevity and accounting for depreciation on each unit or group of like units.

The property ledger serves as an efficient means for depreciation accounting. It is, however, not a complete solution for the depreciation problem. Mortality experience will furnish data concerning the average life of equipment, and thence the average depreciation rate; but operating conditions may vary widely, making it necessary that the property be competently inspected at intervals to determine whether the actual depreciation is the same as the recorded or theoretical depreciation. If the two do not agree, the recorded depreciation should be corrected to the actual depreciation.

Much municipal property is relatively long-lived. However, the more modern mechanization of municipal equipment has introduced many changes in the depreciation and maintenance aspects of municipal property.

Mortality Data

There is need for reliable data on the mortality of various types of property used by municipalities. Property ledger accounts when properly kept will furnish much information concerning the service life of municipal property and maintenance costs. This information is valuable, not only in the operation of plants, but also to the

Unit - Steam Road Roller | Mfd. by R-B-M Co. | Time Used or Output Record
Class of Equipment 7 | Mfr's. Type & No. P387-S
Dept. Streets | Purchased from:- R-B-M Co.

Date	Repairs: Description	Repairs: Cost	Depreciation: Item #1 Main Unit. Age/Prob. Life	Cond. %	Present Value	Item #2 Scarifier. Age/Prob. Life	Cond. %	Present Value	Item #3 Age/Prob. Life	Cond. %	Present Value	Total for whole unit: Present Value	Depr. Reserve	Annual Depr	Date
1/1/19	Cost new del.	$2500.00	0/14	100	$2000.00	0/7	100	$500.00				$2500.00	0		1/1/19
	Est. salvage value	100.00													
	Depr. value	2400.00	1/14	92.86	1864.36	1/7	85.7	428.60				2292.96	207.04	207.04	12/31/19
			2/14	85.72	1728.67	2/7	71.4	357.20				2085.87	414.13	207.09	12/31/20
			3/14	78.58	1593.00	3/7	57.1	285.82				1878.82	621.20	207.07	12/31/21
			4/14	71.44	1457.33	4/7	42.8	214.40				1671.73	828.27	207.07	12/31/22
			5/14	64.3	1321.66	5/7	28.5	143.00				1464.66	1035.34	207.07	12/31/23
			6/14	57.16	1186.00	6/7	14.2	71.60				1257.60	1242.40	207.06	12/31/24
												1070.00	1430.00		
			7/14	50.00	1050.00	7/7	0.0	20.00				1530.00	-480	187.60	12/31/25
1/1/26	Scarifier-Cost Del.	$550.00				0/7	100.0	550.00				$1600	950.00		1/1/26
	Est. Salvage Value	20.00	8/14	42.86	914.33	1/7	85.7	471.20				1388.53	1161.91	211.91	12/31/26
	Depr. Value	$530.00													
			9/14	35.72	778.66	2/7	71.4	398.40				1177.06	1372.94	211.96	12/31/27
			10/14	28.58	643.00	3/7	57.1	322.60				965.60	1584.40	211.91	12/31/28
			11/14	21.44	507.93	4/7	42.8	246.80				754.13	1795.87	211.91	12/31/29
			12/14	14.30	371.66	5/7	28.5	171.00				542.66	2007.34	211.91	12/31/30
			13/15	9.53	281.11	6/8	19.0	120.67				401.78	2148.22	140.88	12/31/31
			14/15	4.76	190.56	7/8	9.5	70.33				260.89	2289.11	140.89	12/31/32
	Retired 10-15-33														
	Net salvage		15/15	0.0	100.0	8/8	0.0	20.00				120.00	2430.00	140.89	12/31/33
	Main unit	$100.00											14.05		
	Scarifier	20.00											2550.00		

Enter date of repairs | Enter repairs as they are made | Enter cost of repairs

Form 3. Loose-Leaf Property Ledger for Composite Units

engineers and executives who make an economic selection of municipal equipment.

Comparison of Costs

The property ledger may be designed to include cost information for repairs and maintenance on specific equipment, also data concerning the input and output of certain units. These data when used with depreciation will allow a comparison of operation costs of different equipment used for the same purpose.

The cost data of the property ledger furnishes information which

(Continued on page 72)

Unit:- Water Meters | Purchased from: _____ | Rating or size 5/8"
Manufacturer: _____ | Location: In city limits | Type: Disc
Mfrs. serial No. _____ | Department: Water

Date	No. in Service	Additions: No.	Unit Cost F.O.B.	Unit install. cost	Total unit install. cost	Total install. cost	Retirements: No.	Deduction from depreciable value	Depreciation: Age/Life of avg. survivor	Cond. %	Depreciable value new of survivor	Annual Depr.	Depr. Reserve	Present or residual value	Repairs: Date	Description	Cost

Form 4. Loose-Leaf Property Ledger for Age Groups of Like Property Units

Photographs Dramatize Housing

By Caroline Williams

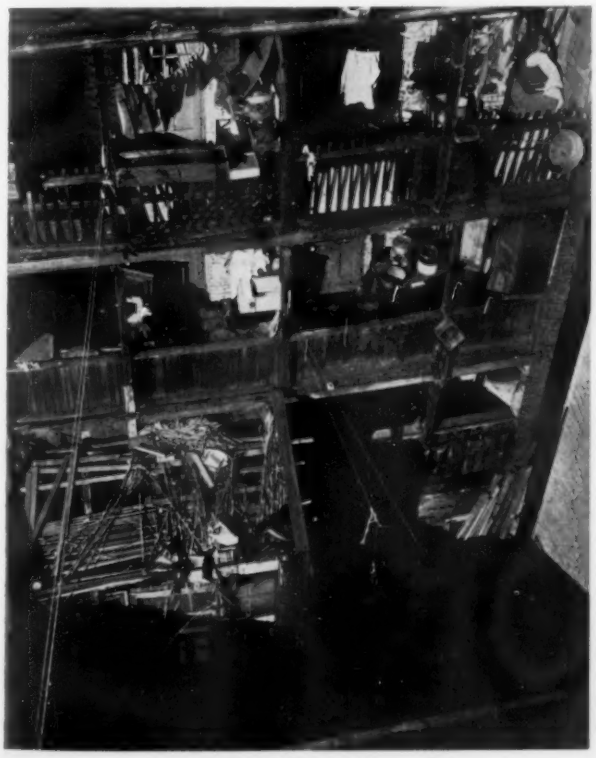
"How New York Lives"—the story of the city's housing, old and new—is graphically portrayed in the prize-winning entries in a photographic contest conducted by the Citizens' Housing Council of New York this spring. The city-wide contest created keen interest among both amateur and professional photographers. By May 31, the closing date, over 700 entries had been received.

From this number, 18 photographs were chosen as prize winners, and 70 more were selected as Certificate of Merit pictures for exhibition. The judges, headed by Col. Edward J. Steichen, dean of American photographers, included both eminent photographers and housing experts. Dr. Arnold Genthe, Anton Bruehl, Alfred Eisenstaedt, Grace Mayer, Curator of Prints of the Museum of the City of New York, Louis H. Pink, Chairman of the New York State Board of Housing, and Mrs. Mary K. Simkhovitch, Vice-Chairman of the New York City Housing Authority, made up the jury.

Prizes were awarded at the Museum of the City of New York on June 15, the exercises also marking the opening of concurrent exhibitions of the photographs at the Museum and at the New York Public Library. John Muller received the first prize award for his picture, "Poverty." Second prize went to David Robbins and Arnold Eagle of the Federal Arts Project for their view of a squalid tenement interior. Third prize was awarded to Max Yavno for "Big City Playground." A special prize given by Col. Steichen also went to David Robbins and Arnold Eagle for their excellent series of photographs entitled "One Third of a Nation."

The significant scarcity of photographs depicting new housing projects was noted by both Margaret Bourke-White and Mrs. Samuel I. Rosenman, speakers at the exercises. Only 24 entries (two of which are here reproduced) showed new model housing for wage-earner families. The rest of the photographs strongly presented the other side of the picture, crowded interiors, lack of playing facilities, derelict tenements, sunless streets and littered back-yards of large sections of Greater New York in 1939.

The contest has served the purpose not only of interesting a large number of photographers in thus using their skill to portray the housing problem but, more important, it has provided an excellent display for present and future use. The exhibit is being viewed by thousands of people during its showing at the New York Public Library (June 19-July 15), and countless more will have the opportunity of seeing it this summer at the Museum of the City of New York and subsequently in department stores, schools, churches, and civic centers.



"POVERTY"
By John Muller—First Prize

WILLIAMSBURG HOUSING PROJECT
Photograph by Gladys Campbell

HARLEM RIVER HOUSES
Photograph by Eugene Roder

Sacramento Uses Concrete and Vitrified Pipe in $700,000 Construction Project of

Combined Sewers and Three New Pumps

THE city of Sacramento, Calif., is now engaging in a major program of construction of new sewers for areas not heretofore adequately served, and intercepting sewers to afford better drainage and quicker delivery of domestic sewage and storm water to the screening stations on the Sacramento River for the final disposal by dilution. Seven major projects have recently been completed at a cost of over $620,000, using Hume process spun concrete pipe for 42- to 57-inch sewers, and vitrified clay for 36-inch and smaller.

Sacramento has very flat grades. The highest elevation in the city is 53, and a large part of the community is at elevation 25 to 30 above sea-level. Existing 114- and 108-inch sewers in two major north-and-south thoroughfares intersect the new construction, thus greatly strengthening the drainage network.

Construction

All the work has been done as PWA contract projects. The contractors have used trench excavators for the entire work, with the excavation running 13 to 15 feet deep. On the E Street project an Austin trencher was used that was capable of digging a trench 40 feet deep and 15 feet wide. This machine had to shut down daily about 2 P.M. because it was getting too much trench open ahead of the pipe layers.

The work included the construction of manholes every 400 feet, or one to a block, and catch-basins at every corner of each intersection. Because of the flat grades, the catch-basins do not gather much débris, and only a 1-cubic-foot pocket is provided, covered with a 12 x 14-inch grating. The basin has a 6-inch pipe turned to form a trap against the escape of sewer gases along the thoroughfares. When the construction of these new sewers was under discussion with Fred J. Klaus, City Engineer, he reported that with the present type of construction even with the flat grades and the small catch-basins, the grit that enters the sewers does not constitute a serious problem, for the flow is sufficient to furnish a flushing velocity. The per capita use of water in Sacramento is 300 gallons. No automatic sewer flushers are installed in the city now, there being still about six in the system from earlier days.

Special joints that have proved especially tight under Sacramento conditions are used for all the sewers large enough to permit the entrance of a man to make up the joint from the inside. The pipes are butted close on the outside, and a man inside trowels a neat cement into the joint without the use of any packing. The results have been no infiltration and no visible leakage to mark the upper walls.

After the joints have been made up, the trench is allowed to remain open for two days so that the joints have a chance to set and any bad ones can be corrected. Then the trench is backfilled with a drag scraper, and the material is soaked with water as it is placed. Then the joints are checked again for leakage. The trench is then surfaced with a temporary pavement consisting of crushed rock with some clay, and ½-gallon of penetration oil is sprayed over the top to prevent dust. This pavement is left for three months to permit complete settlement of the trench, and then the permanent pavement to match that already on the street is laid. It has been found that with the heavy truck traffic that uses most of the through streets, the trenches consolidate well in advance of the time for the permanent paving.

In conjunction with the construction of the collecting system, an addition was made to the sewage pumping and screening plant. This consists of three Worthington pumps of 60, 78.5 and 100 mgd capacity with 500-hp General Electric motors and necessary electrical equipment, additional building sump area, and an 84-inch outfall sewer to the river. The hydraulic valves on the 42-inch discharge are furnished by A. P. Smith Mfg. Co. A unique feature of the design is the use of USS Corten rust-resisting steel for all suction and discharge piping as far as the sewer outfall. This discharge line is 84-inch diameter of ⅝-inch steel.

The present construction program and the lengths and costs are tabulated below. The program is under the direction of the City Engineer, Fred J. Klaus.

SEWER CONSTRUCTION AND COSTS

Street	Size of Pipe	Length	Cost
E Street	42" to 45"	7,769 ft.	$81,290
H Street	42" to 45"	5,245 "	78,424
O Street	48" to 57"	5,242 "	83,496
Markham Way	36" to 15"	7,432 "	54,700
L & M Streets	36" to 15"	10,200 "	57,335
Scattered	30" to 8"	21,768 "	46,000
Addition to screening and pumping plant			184,500
Paving			50,000

Public Recreation Gains

MORE local funds were spent for public recreation under leadership in 1938 than in any year since 1931, according to the 1938 Year Book of the National Recreation Association, just published. At least fifteen cities employed full-time year-round executives for the first time in 1938. The number of recreation leaders paid from regular funds increased to 23,975 in 1938, gains of 8, 11 and 8 per cent respectively for each of the last three years over the preceding year. With 3,345 full-time year-round leaders reported, 1938 set another new high—almost 50 per cent above the low figure of the depression reported in 1932.

The annual survey shows 1,295 communities spending local funds for recreation under leadership. This figure is the largest ever reported, surpassing the 1937 figure of 1,280.

Twenty-eight cities reported bond issues for recreation passed in 1938 totaling $3,155,323. Total local expenditures for recreation under leadership, as reported, aggregated $29,365,472.

Re-development Plan for Rhode Island's South Shore

By S. G. TINKHAM
Staff Engineer, State Planning Board

THE accompanying sketch shows a proposed plan for the allocation of land uses and a treatment of traffic circulation in the re-development of the south shore of Rhode Island, prepared for the Rhode Island State Planning Board by Justin Hartzog, whose services as a planning consultant were made available to Rhode Island through the cooperation of the National Resources Committee. The proposed plan is the result of a comprehensive study of existing conditions along the southern shore of Rhode Island, with careful consideration of the many factors involved in the problem of permanent rehabilitation of the area.

The fundamental objectives sought to be accomplished are the safeguarding of human life and the prevention of major property loss in a recurrence of hurricane and inundation conditions which last September laid the area in waste. Relief from traffic congestion; enhanced enjoyment of the beaches; increased tax revenues; provision for future expansion of facilities for the use and enjoyment of the citizens of Rhode Island and its visitors; and livelihood for local residents and the prosperity of local communities, are other major goals of the plan.

Owing to the firm headlands at Watch Hill, Westerly, Weekapaug, Green Hill, Matunuck and Point Judith, the south shore of Rhode Island is held to be fairly permanent, and a fairly constant shoreline is assured. Advantage is taken of these favorable conditions to develop the many fine, sandy beaches and the adjacent salt ponds for public and private uses, and to provide sites for safe, permanent construction of dwellings, summer cottages, hotels, business areas and amusement centers, each according to the best uses of the entire area.

By holding new construction generally above the 15-foot mean low-water level, future property loss

Photograph by courtesy of Avery Lord

Town of Narragansett, R. I., Before the Hurricane

Development of the Narragansett Shore Proposed by the State Planning Board

through the destructive elements of wind and tide will be minimized and the attending loss in taxable values avoided. The suggested development of the beaches and the ponds in the rear of the barrier beaches for recreational purposes will greatly increase the total beach area available for present and future needs and, by restricting habitation on the sand spits and along the low, unprotected areas, great loss of life in the future will be prevented.

As shown in the sketch, the present Shore Road—Route No. 1—will be utilized, and many of the existing roads from the Shore Road to the beaches will be retained, with others provided from time to time as needed, thus effecting a solution to traffic demands, both present and future, while at the same time providing for safe, quick exits from the beaches in times of necessity.

New Public Areas Designated

According to the nature of the land, and considering the best uses to which it may be put, certain areas have been designated as public areas, like those indicated at Misquamicut and at Matunuck on the plan. Construction of buildings on the beaches would be restricted to bath-houses, pavilions, cabanas, boat-houses and piers, and parking spaces. Other areas have been designated as private-use development areas, where appropriate residential, business and summer recreational development will be stimulated.

Included in the plan for future expansion is the development of the Shore Road ultimately into an Ocean Parkway, giving magnificent views of the ocean, adequately landscaped and developed according to the scenic possibilities and natural beauty.

Plans are already under way by the town of Westerly for the acquisition of a public beach at Misquamicut, and authorization for a bond issue to cover the expense is pending in the Legislature at the present time.

The town of Narragansett has received authority to issue bonds and to engage in a bath-house business and is proceeding with plans for extensive rebuilding at Narragansett Pier.

Housing Development by Private Syndicate Planned

The State Planning Board is now working on a plan for the formation of a private syndicate to undertake the erection of some 500 to 600 semi-prefabricated houses, containing two and three bedrooms, with bath, living room, porch, dinette, kitchenette and service-room, together with heating, lighting, plumbing and electric refrigeration, and including a one-car garage, to be constructed on lots 75 x 150 feet in the designated residential areas, with rights to private beaches. Under the plan, the acquisition of necessary land will be by purchase, with an exchange provision for those now owning land in the restricted areas under the jurisdiction of the towns involved.

The State Planning Board has endeavored to set up standards to satisfy an average demand as to the number of rooms, necessary facilities and conveniences, at a price within the reach of the average purchaser and, in general, to furnish to a proportion of past and future members of summer residents, modern, up-to-date dwellings and facilities in which investment may be made with confidence, and possession enjoyed in security, and, in addition, to make available to prospective owners, through an easement, the right of use to certain beach areas for private recreational purposes, free from unreasonable trespass and intrusion.

The First "Safe and Sane" Fourth

The Common Council of the city of New York decided in 1786 that "on account of the dangers of fire there will be no illuminations, bonfires or fireworks of any kind."

Well, that's what the city fathers decided then and what they are still deciding from year to year, and the citizens refrain from even lighting a match . . . or do they?

A Joint Paving Project of City and County of Lorain

New Concrete Paving on Broadway, Lorain, Ohio, Provides Heavy-Duty Link Between U. S. 6 and 20

By HENRY F. ALEXANDER
City Engineer,
Lorain, Ohio

AMONG the many work relief projects constructed in Lorain, Ohio, in the past few years have been storm-water and sanitary sewers and street paving. In 1937 a total of 24,487 square yards of macadam paving was completed, and in the first half of 1938 some 21,000 square yards of concrete paving was laid 8 inches thick, with 6 x 6-inch mesh reinforcement and with the curb integral with the pavement. The result was gratifying and the morale of the workmen excellent, so a large project was set up for the late summer on Broadway, the principal business street of the city.

Broadway extends from Lake Erie on the north entirely across the city and is designated as State Route No. 57. It connects with State Route No. 2 and U. S. Route No. 6 at Erie Avenue and is the connecting link between U. S. No. 6 at Lorain and U. S. No. 20 at Elyria. For several years this street was in bad condition owing to heavy truck traffic. In 1935-36 the section from the south city line between 36th and 28th Streets was repaved by the State Highway Department, the city of Lorain and Lorain County contributing a portion of the cost. This section was paved with brick.

The Author Pointing to the Well-Laid Street Railroad Ties over Which the Paving Was Poured

Needed Construction

In August, 1938, WPA, the city of Lorain and Lorain County agreed jointly to complete the repaving of Broadway from the north end of the brick section at 28th Street for a distance of 9,325 feet northward. WPA permitted the use of all needed paving machinery, so a contract to furnish the necessary machinery with operators was awarded to Hollinger & Davidson of Akron, Ohio. This contract provided the necessary finishing machines, mixer, batcher, power shovel, concrete forms, trucks and experienced operators. Labor to work with the machines and other equipment was provided from WPA rolls.

From Erie Avenue southward for a distance of 825 feet Broadway is 67 feet wide, and thence to 28th Street the width is 52 feet. The area of this entire section from Erie Avenue to 28th Street is 59,-

The Completed Concrete Pavement, 52 Feet in Width, on Broadway, Lorain

338 square yards.

In the central portion of the street there is a strip 19 feet wide that was formerly used by a street railway. The foundation of these car tracks was concrete, having a thickness from 12 to 20 inches. The wooden ties that had been embedded in the concrete for about twenty years were found to be as solid and free from decay as new ones. As there was from 6 to 14 inches of concrete beneath them, and the space between the ties was solidly concreted and an average of 6 inches of concrete was to be placed over them, it was decided to leave the ties in place. There were at least 9,000 of these ties in the section paved.

The sections of concrete between the curbs and the former track bed were made 9 inches thick, with 6 x 6-inch mesh reinforcement, using 49 pounds per square yard. With an average of 6 inches of pavement over the track section, the thickness of the new pavement at the center was from 18 to 26 inches, a modern record.

Concrete was placed in lanes 12 feet wide, making four lanes with side strips of 2 feet each in the 52-foot section and 9½ feet wide in the 67-foot section. A longitudinal center joint was installed and 24 feet from the center on each side, 10 feet from the center joint, is a free joint, making five longitudinal joints in all. Transversely, there is an expansion joint every 80 feet, and a contraction joint every 20 feet.

Included in this project was the construction of 5,184 feet of storm-water sewers ranging from 12 to 36 inches in diameter, and 2,080 feet of 12-inch inlet pipe. The purpose of this storm-water sewer is to separate the storm water from the sewage, the old sewer in Broadway having been used as a combined sewer.

Construction Under Way

On September 7, 1938, the shovel began to remove the old pavement, and the first concrete was poured September 23. Operations were carried on at high speed; the workers who did the grading and construction of storm sewers worked three shifts of 6 hours each. The concrete crews worked two shifts of 6 hours each. Approximately 1,200 men were employed on the project, and the WPA foremen and workers all deserve much praise for the excellent work that they accomplished.

The removal of the old pavement required 55 days. With the first concrete poured on September 23, a section of new pavement 48 feet wide and 9,259 feet long was completed November 16, 1938. A section 66 feet wide was not paved, since the sewer had to be constructed across the street at that point. The area concreted in the 48-foot section was 48,566 square yards, and the time required, 71 days, including Sundays, an average of 684 square yards per day. The total number of working days was only 59, and the average concrete laid was 823 square yards per day. The 9-foot, 6-inch side strips were finished November 22, thus completing the entire 67-foot-wide x 825-foot-long section and the 48-foot-wide x 8,434-foot-long section, including nearly a mile of storm sewers with connections, in a period of 78 days, Sundays and two holidays included.

A Summer School for City Attorneys

A COMPREHENSIVE lecture series dealing with the varied legal problems of municipal government and administration will be given during the two weeks commencing July 17 in New York City. The program is sponsored by the Practising Law Institute, a non-profit educational institution, which conducts seminars and lecture courses for practising lawyers.

The program has been designed to make available to municipal attorneys the results of the intensive experience of a group of twenty experts in this field. Among the lecturers are William C. Chanler, Corporation Counsel of the City of New York, who will discuss the functioning of the city attorney as assistant to the administration, legal adviser and attorney conducting the city's litigation. Seven members of Mr. Chanler's staff will also lecture on such matters as legal problems involved in local emergency taxes, provisions of municipal construction and purchase contracts and their interpretation, taxpayers' suits, contractors' claims for extras; public utilities and the use of the city's streets, reduction of utility rates; condemnation proceedings, city planning, zoning, and related problems; municipal regulation of businesses, hotels, taxicabs, etc.; rule-making power of municipal officials.

Four lecturers will discuss Municipal Bonds: Arnold Frye, Secretary of the Committee on Municipal Law of the American Bar Association; George Xanthaky, City Councilman, Long Beach, N. Y.; Russell McInnes, of Lehman Bros.; and Charles L. Kades, Special Assistant to the General Counsel of the U. S. Treasury Department. Other interesting lectures in the series are: by Paul J. Kern, President of the Civil Service Commission of the City of New York, on the application of the civil service laws and judicial review; David Diamond, Corporation Counsel of Buffalo, N. Y., on methods of investigating and preventing municipal corruption; Maxwell H. Tretter, counsel for the New York City Housing Authority, on the legal and financial problems of public housing; James C. Tormey, Corporation Counsel of Syracuse, N. Y., on real estate taxes, tax exemptions, legal proceedings for the reduction of assessments; William H. Emerson, Corporation Counsel of Rochester, N. Y., on the problem of readjustment of municipal real estate taxes; William A. Davidson, County Attorney, Westchester County, N. Y., on methods of foreclosing real estate tax liens; William G. Mulligan, Jr., Associate Counsel, New York City Board of Transportation, on regulation of public utilities and municipal operation; and Leonard Wallstein, Jr., former Assistant Corporation Counsel, New York City, on the defense of tort claims against municipalities.

Lectures in this series will be given daily from 10:00 A.M. to 1:00 P.M. and from 2:30 to 5:00 P.M., July 17-28, in comfortable air-conditioned rooms in the Hotel Astor, New York. Saturdays and Sundays are reserved for recreation, including visits to the New York World's Fair.

This lecture series is part of the annual Summer Session of the Practising Law Institute, whose courses are attended by municipal officers as well as attorneys. Courses in other subjects which will be given at the Summer Session (each consisting of ten two-hour sessions) include Fundamentals of Income Tax Law, Tax Practice and Procedure, Current Problems in Taxation, Labor Law, Corporate Practice, Real Estate, Trials, Trials Clinic, Bankruptcy and Reorganization, Accounting. The Summer Session also includes a twenty-lecture series on Criminal Prosecution designed to meet the needs of prosecuting attorneys.

Further information may be obtained from Harold P. Seligson, Director of the Practising Law Institute, 150 Broadway, New York.

Curb Parking Solved in Nation's Capital

By W. A. Van Duzer
Director of Vehicles and Traffic, District of Columbia

The one way to buy equipment with confidence and assurance that there will be no comeback is to be certain that your specifications are right. When Congress in its 1938 session authorized the installation of parking meters in a limited area of the Washington business district, the Department of Vehicles and Traffic of the District of Columbia was designated by the Commission to buy meters. I approached the National Bureau of Standards, which consented to assist in drawing up the specifications. I knew that the only possible criticism could be on the score of strictness, and this proved to be the case. Nineteen different meters of various makes and types were examined and the good and bad features of each noted. When the specifications were finally made up as a result of the Bureau's report, it was found that one automatic and one manual meter substantially met them, thus restricting bidding and we returned the bids unopened.

"We must buy parking meters," I informed the Bureau, "and we want to buy parking meters." So the specifications were revised to permit a real effort to meet them, and bids were again invited. This time three meters of three manufacturers, two automatics and a manual, were acceptable. On further consideration, however, we had decided to buy only automatics; so we rejected all bids, omitted from the specifications all mention of manual meters and advertised a third time. Both makes of automatic meters were found to be acceptable, and an order was placed for 310 Karparks, and operating 6½ hours per day collected sufficient money to pay for the meters in four months.

This, briefly, has been the experience with 310 parking meters in Washington, D. C., since November 14, 1938, when they were installed:

1. Average total, $122 per day operating from 9:30 A.M. to 4 P.M. except Sundays and holidays; 265 meters set for one hour and 45 meters for 20 minutes, the 20-minute meters collecting about twice the revenue of the 60-minute meters. Out of 220,000 nickels deposited, there were only 81 slugs, a loss of $4.05 in $11,000 collected.

2. Average turnover of cars is 8.6, compared with 6.4 cars without meters.

3. Overtime parking reduced from 23.6 per cent to 13.4 per cent after the installation of meters.

4. It now takes a car 22 seconds to park, compared with 38 seconds before meters were installed, which for the 2,550 cars using these spaces amounts to a total saving of 11 hours per day. President E. D. Merrill of the Capitol Transit Co. states that while this is a real gain per car, there are now 33 per cent more cars parking, and that the advantage to mass transportation is the elimination of double parking.

5. Cars which used to cruise on the average nine blocks to find a place to park now find it in 5.2 blocks, which saves 826 miles of daily cruising through this congested district.

6. The number of parking tickets has been cut in half.

7. Many fewer policemen supervise parking than were assigned to this troublesome job before meters were installed.

8. Before meters were installed we asked people whether or not they favored the innovation, and 9 out of 20 said yes, whereas since installation 19 out of 20 are in favor of them. The Keystone Automobile Club's Washington Branch, which urged the installation of parking meters, made a survey before and after, finding a 47 per cent increased turnover in cars parking.

Courtesy of the Washington Star

Melvin C. Hazen, President Board of Commissioners, D. C., Drops Nickel in Karpark Meter, to the Obvious Interest of William A. Van Duzer, Director of Vehicles and Traffic, and Precinct Captain Harvey Callahan

An inspector inspects the operation of the parking meters and makes a daily written report. The cumulative difficulties sum up as follows for the 4½ months:

	Nov.-Feb. 3½ Months	March 1 Month
Broken glass dial	54	0
Coin slot jammed (meter not emptied)	44	0
Nickels jammed (bent coins)	27	7
"Flag" failures	21	1
Clocks run down (our fault)	13	0
Damaged by traffic	7	1
Heads loose on stanchions	7	0
Stanchions loose	3	0
Coin slot obstructed	5	4
Clock failure	0	1

Specifications Satisfactory

A bill is now before Congress authorizing the installation of additional meters. Probably the same specifications will be used. The major requirements are: (1) that the parker receive the time he pays for, and be unable to change that time; (2) that the meter indicate both when space is available and when it is legally occupied; (3) that the clock mechanism be rendered rust-resistant, and that it last for years, as is expected of a clock in the home; (4) that separate openings be provided for servicing and for collecting the money.

The specifications are essentially functional. The reliability in service is covered by (1) the provision that the manufacturer must show a satisfactory record in the

field of the performance of a given number of similar meters, and by (2) making final acceptance contingent on successful operation over a stated period. Some of the provisions—for example, the parking time, color of signals, manner of protecting coin receptacle, particular method of mounting meter—are clearly optional locally, choice being dictated by apparent local needs. In the functional specifications prepared with the assistance of the National Bureau of Standards, here published, the bracketed material shows the omissions in the final specifications covering automatic meters.

While we regard the nickels which meters collect as merely part of the municipal operation of regulating curb parking, we are not unconscious of the fact that if parking meters are installed they are likely to produce an annual income exceeding $200,000. This revenue will come as a result of solving the problem of the short-time parker. Consideration is being given to using this money to provide planned parking lots for the all-day parker. We estimate that it will permit us to provide 1,000,000 square feet of space, or enough to accommodate 5,000 cars. This can be done by (1) putting money into parking lots as it becomes available; or (2) providing very large parking facilities by advancing funds to be repaid by revenues from the meters—the quicker and more satisfactory method.

DISTRICT OF COLUMBIA METER SPECIFICATIONS

General Requirements.—The meter shall be of the type which indicates by suitable signals, respectively, (1) that the meter is in use (i.e., is engaged in measuring the permitted parking time), or (2) is not in use and that the space at which it is located should be available for parking. It shall be operable only by a nickel (5-cent piece) and the maximum time interval measured between the change of signals shall be at least one hour. [It may be either of the fully "automatic" type, in which the operation is completely automatic after the coin has been inserted, or of the manually operated type in which the operation of the device is initiated by the user after the deposit of the coin, by the turning of a handle or similar device, after which the operation is automatic.]

The design and construction shall be such that it assures both that the full parking time will be made available to the user and also that the time-measuring mechanism starts the measurement of the parking time as soon as the "in use" signal is displayed.

The meter must not be capable of being operated so that multiples of the permitted parking time will be consecutively set up on the meter by the insertion of more than one coin initially, nor so that the operating time as measured by the meter can be changed after the coin has once been deposited, except by the deposit of an additional coin which will reset the meter anew to again start the operating cycle for the full parking period.

The meter shall be constructed of corrosion-resisting materials. It shall be of substantial and rugged construction to withstand rough usage and assure long life with a minimum amount of servicing. The design shall be as simple as practicable to perform the specified functions. The workmanship shall be of first-class character throughout.

Meters will not be acceptable for purchase unless evidence satisfactory to the Commissioners, D. C., is presented to show that at least 300 meters of substantially the same design and construction as that of the particular model offered have been in successful use for a period of at least six months. All bids received must be on late type current models which the company is producing at the time the bid is made.

Detail Requirements.—The meter shall consist of the following principal parts: a metal enclosing case, a clock mechanism, operating mechanism, and coin receptacle.

Meter Case.—The entire meter mechanism shall be enclosed in a substantial metal case, so arranged as to prevent access to the interior except through the openings provided for servicing the meter and for the collection of coins. Such openings shall be protected by cylinder locks of at least four tumblers. The coin receptacle shall not be accessible through the opening provided for servicing the meter; and the lock protecting the servicing opening and the lock protecting the opening for the collection of coins shall not be operable by the same key. The case shall be of weatherproof construction. It shall be arranged for mounting at the top of a standard pipe at least 2 inches in diameter. Provision shall be made for securely attaching the meter to the pipe by mechanical means. The arrangement shall be such that the meter case must be opened before the meter can be removed from the pipe. A blueprint plan of the suggested method of installation, with particular reference to the flange and the fastening of the flange to the sidewalk, is attached, bolts to be not less than ½-inch in diameter and 2½ inches in length of engaged screw. There shall be permanently mounted on each meter, on the side on which the operating handle is located (or in the case of automatic meters on the side on which the coin slot is located), a metal plate bearing in easily legible characters clear and adequate directions for the proper operation of the meter.

Clock Mechanism.—The clock mechanism shall indicate correct time at all temperatures between 0° F. and 100° F., with an error not exceeding 2 minutes per hour, and shall be so regulated that for any time interval not exceeding 2 hours the indicated time shall not exceed the actual elapsed time. (That is, any error in the indicated time shall be in such a direction that the clock is slow.)

The clock mechanism throughout shall be of high-grade workmanship with gears and pinions free of burrs. Gears shall be of clock brass, steel or other suitable metal, and shall be not less than 0.025-inch in thickness. Train plates shall be of clock brass and not less than 0.04-inch in thickness. Arbors and staffs shall be of drill-rod steel. The portions of the pallet which engage the teeth of the escapement wheel shall be of monel metal or steel. The movement shall be driven by a mainspring. In the automatic type of meter the mainspring shall be enclosed in a barrel or otherwise so constrained as to prevent damage to other parts of the mechanism in case of spring breakage. Operation shall be by a lever escapement and balance wheel or by a pendulum not more than 3 inches in length. The movement shall be protected against corrosion by lacquering, chromium plating or other suitable means.

The mechanism shall be wound [by hand either by turning the operating handle as in the manual or] by a special winding key [as in the automatic type meters. If the meter is of the manual type, in which the clock is wound by the action of setting the meter in operation, the clock shall be capable of running for a period of at least two hours. If the meter is of the automatic type, in which the clock is wound separately] the clock shall be capable of running continuously for a period of at least 60 hours between windings. The clock shall not operate continuously but shall come to rest after each operating cycle of the meter has been completed.

Operating Mechanism.—The entire meter-operating mechanism (including the clock mechanism) shall be constructed as a completely assembled single unit so that it may readily be removed and replaced as a whole without removing or disassembling the meter case.

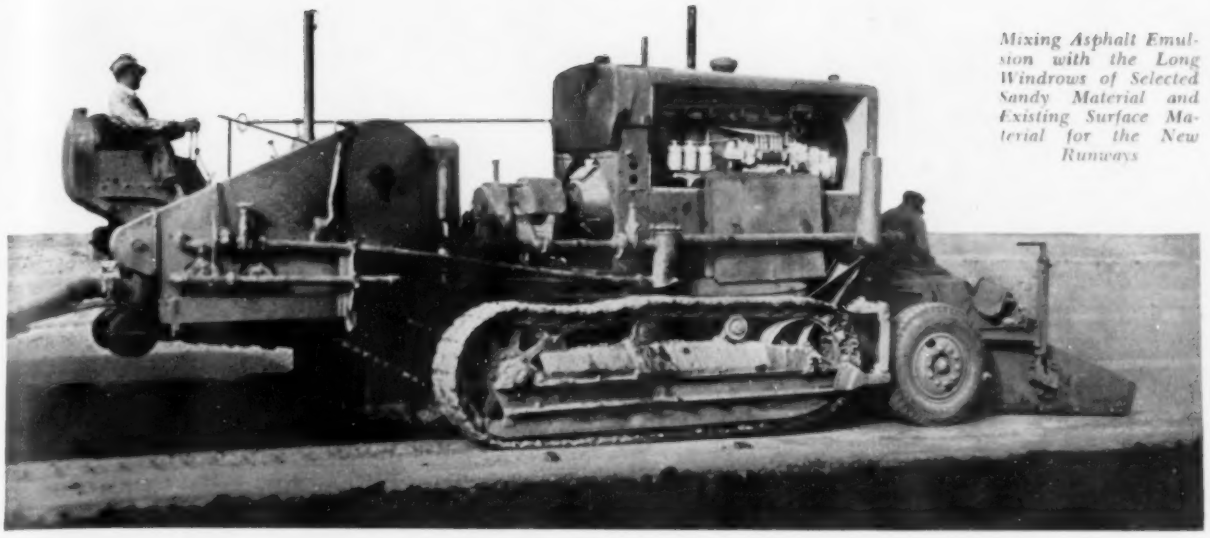
In addition to the "in use" and "space available" signals, the meter shall be provided with a graduated scale, the smallest graduation not to exceed 5 minutes, to indicate continuously either the length of time still remaining before the parking period expires, or the total elapsed time from the beginning of the parking period. The meter shall continue to indicate the time for a period of not less than 10 minutes after the parking period has expired, i.e., for a total period of not less than 70 minutes. The meter signals shall be plainly visible from both the front and back of the meter. The "in use" signal shall be green, and the "space available" signal shall be red. The method of operation and the character of the signals should be such that for the "in use" period a green signal alone will be visible and for the "space available" period a red signal alone will be visible. In any event the method of operation and the character of the signals shall be such that the "in use" period and the "space available" period will be respectively shown in a manner which is definite and clear, so that it can readily be determined at a glance, from either side of the meter, whether the "in use" period or "space available" period is being indicated by the meter. The "in use" period indicated by the meter shall include the assigned parking time only. It shall not include any extension beyond the assigned parking time (i.e., no "period of grace") either at the beginning or at the end of the parking period.

Simple means shall be provided in the meter mechanism for setting the meter to operate for a parking time of any desired length from 10 minutes to 60 minutes in increments of not more than 10 minutes. The settings for the respective adjustments shall be definitely marked.

Coin Receptacle.—Each meter shall be provided with a removable receptacle for receiving and safely retaining the coins deposited. The receptacle shall be of substantial construction of corrosion-resisting material, and shall have a capacity for receiving not less than 50 nickels. Provision shall be made against the unauthorized removal of coins from the receptacle by providing means for locking or sealing the opening provided for the removal of coins, and by a device to prevent removal of the coins through the slot through which they enter the receptacle. Means shall also be provided to assure that the coin slot in the receptacle will properly register with the coin chute in the meter when the receptacle is placed in the meter case.

The meter may be provided with an automatic counter to register the number of times that the meter has been operated, to serve as a check on the number of coins in the receptacle. If an automatic counter is provided, it shall be of the positively-actuated, non-reversible, non-resettable type, and so assembled in the mechanism that it cannot be readily disconnected from the operating mechanism, or otherwise tampered with.

The meters shall be protected against the use of other than genuine coins of the specified denomination, slugs, or the like, at least to the following extent: The coin deposited to actuate the meter shall, in its passage through the meter, be positively held so as to be clearly exposed to view through a window provided for the purpose on the front of the meter. The coin shall be retained, thus exposed to view, during the entire operating period, and shall not be displaced until the coin is deposited for the next succeeding operation of the meter. The coin slot shall be of such dimensions as to reject coins of greater diameter or greater thickness than those of the genuine coin. Effective means shall be provided to prevent the operation of the machine by a penny and to prevent pennies from clogging the coin passage.



Mixing Asphalt Emulsion with the Long Windrows of Selected Sandy Material and Existing Surface Material for the New Runways

Asphalt Stabilized Runways

Built as Part of Extensive Development Program at Los Angeles Municipal Airport 13 Miles from City

NOTWITHSTANDING the failure of a proposed $3,000,000 municipal bond issue for airport improvements, Los Angeles is going ahead under a joint city and Works Progress Administration project with an extensive field improvement and runway construction program. Although the bond proposal, which would have provided the funds necessary to complete the Municipal Airport as the major airline terminal for the Los Angeles metropolitan area, received a favorable vote of approximately 60 per cent of the ballots cast at the May 2 municipal election, it did not obtain the two-thirds majority required by the city charter to authorize such bond issues.

The bond proposal contemplated the construction of a new administration and airline terminal building embracing 80,000 square feet or more of floor space, three large steel and concrete hangars for the use of the airlines, additional runway facilities, and other improvements necessary to completely equip the field as a modern airline terminal.

The failure of the measure has at least temporarily delayed the plans for the administration building and new hangars, but it is anticipated that a major part of the runway program and other field improvements can be carried forward under the joint city and WPA project now under way at the airport.

Airport officials believe, however, that either some alternative means of financing the building program will be found or that a new bond issue proposal for a lesser amount will meet with success if submitted to the electorate sometime next spring. In the meantime, every effort is being made to complete construction of a new main east-west runway and a new north-south runway so that the field will be available by next winter as an alternative or emergency airport, available for the use of the airlines.

Under the present city-WPA project, it is expected that four of the field's new runways will be completed, including the two mentioned above. This project is being financed with a contribution of approximately $311,000 from current city funds for materials, equipment, and supervision, while the WPA is supplying funds for labor.

In addition to the runways, the project also includes construction of necessary taxiways, aprons and field drainage facilities, both surface and subsurface.

New Emulsion-Mix Runways

The field, which is approximately 640 acres in area, will eventually have six runways; two of which will be 300 feet in width, and one 200 feet in width, and the balance 150 feet wide. The great problem in the construction of the runways is to provide a stabilized paved surface upon the natural adobe subgrade, and to exclude excessive moisture from this subgrade so as to prevent its expansion, which would disturb the paved surfaces. The adobe is not suitable for the road-mix runway, so sandy material meeting the specifications was taken from another part of the airport. The existing surface material is mixed with added selected sandy material and used to make a 4½-inch road-mix base when compacted. This material has about 32 per cent passing a 200-mesh sieve, and none retained on a 10-mesh sieve. The mixed materials are windrowed so as to give 3¾ cubic feet of material per running foot of windrow.

This material is stabilized by mixing with a Madsen Road Pug which pulls a tank truck behind it furnishing the asphalt emulsion.

The pug has regularly mixed an average of 2,400 tons of the selected aggregate, and 90,000 gallons of diluted Bitumuls per 8-hour day on this job, applying 7 gallons of the liquid per 3¾ cubic feet of windrow, or 4½ per cent by weight of undiluted asphalt.

About one hour after the mixing of the windrow, it is broken down and spread by an Adams diesel tandem-drive power grader, supplemented by an Austin No. 10 pulled grader. After the material has been spread to the proper depth and is in the proper condition for rolling, a fleet of sheepsfoot rollers is pulled over it until the teeth of the rollers fail to make an indentation greater than ¼-inch. Following this, the loose material remaining on the surface is bladed off and pulled over onto the subgrade to be mixed with the next windrow of road-mix material.

The final surface will consist of 2 inches of asphaltic concrete, which will be laid under a contract to be awarded later.

Drainage

The field has a natural drainage of 10 feet fall per mile, but this is being augmented by shallow gutters on either side of the runway about 100 feet wide and with a drop of 7 inches in 50 feet. These drain to the east side of the field to 18-inch concrete pipes, which drain finally into a 48-inch concrete arch culvert running about 4,000 feet from the field to a stream.

Lighting

Present lighting facilities for night flying consist of a bank of seven Crouse-Hinds floodlights. Field attendants are on duty at all times to provide the lights when needed. The field boundary lights have been installed, but have not yet been placed in operation. Flush lights are to be installed on the new east-west main runway now nearing completion, and this runway, together with the lights, will be placed in operation some time in the fall. Flush lights have also been ordered for the new north-south runway, which is also under construction.

Breaking Down and Spreading the Mixed Windrows with a Power Grader Prior to Consolidating with Sheepsfoot Rollers on New Runways for Los Angeles Municipal Airport

Administration Building

The existing administration building on the south side of the field is of tile-and-stucco construction, four stories high and with a control tower. The present administration building embraces about 7,500 square feet of floor space, but this is inadequate to meet requirements.

Hangars

There are four municipally-owned and one privately-owned hangar located on the airport. All are of tile-and-stucco fire-resistant construction. Two of the municipal hangars embrace 11,200 square feet of floor space each, another 17,000 square feet, and the fourth 25,000 square feet. The one private hangar is about 25,000 square feet in area and is used by the Douglas Aircraft Co. as a final assembly and delivery plant for its El Segundo Division.

There is no transport service in and out of the Los Angeles airport at present, the traffic consisting largely of local flights, transient flights, testing of aircraft manufactured in the Los Angeles area, and flights of units of the air forces of the Army, Navy and Marine Corps. For the year 1938 the landings and take-offs at the field totaled approximately 200,000.

At present none of the transport airlines serving the Los Angeles area operates at this airport. This is because the field is not equipped to accommodate these airlines, either in the matter of runways or in passenger terminal facilities. All four of the transcontinental airlines have agreed to transfer their operations to the municipal airport as soon as the necessary facilities are available.

The Los Angeles Municipal Airport has a constant prevailing wind, is only 13 miles from the City Hall, and all the adjacent boulevards lead into the major street and highway net which serves the metropolitan area. Colonel R. B. Barnitz is Airport Manager for the city of Los Angeles, and all construction is under the direction of Lloyd Aldrich, City Engineer. T. R. K.—934.

Problems of Sewage Treatment

As Seen by a Non-Technical Member of a Local Citizens' Committee and Described for the Benefit of Other Committee Members

In the April, 1932, issue of THE AMERICAN CITY *appeared an article on "What Is Sewage Disposal?" written in the simplest terms by a prominent engineer, Henry W. Taylor, of New York City. This article was aimed to eliminate as much as possible the popular confusion as to sewage treatment, its purposes, problems and methods. Now we offer an article written by a layman who was appointed a member of a Citizens' Committee to study the question of sewage treatment for Plymouth, Mass. He read the engineer's report, which described three possible solutions of the disposal problem.*

He states: "My difficulty was that there were three possible solutions and, as one or more of them left the location to choice, and as there are about 107 square miles in the township, it was evident that there might be innumerable other solutions. Another difficulty was that, like all engineers' reports, this document was written in technical terms, many of which were strange to me. It became evident very quickly that to understand the workings of an Imhoff tank, I would have to find one in operation, and of course to study the results of its operation, satisfactory or otherwise.

"So far as our investigations went, everyone connected with a disposal plant seems to think it is perfect, while those not connected with it think it is far from perfect. Objections apparently are not to the technical operation, but rather to the location, the cost, the smell, the looks, and so on ad infinitum.

"The people at the shore do not want sea disposal, no matter how harmless it may be, while the people ashore do not like the looks of the treatment plants, nor the smell, nor the flies; and yet none of these, unless they be connected with the plant, can tell you whether the plant, such as it is, is operating properly, how it can be improved, or, in fact, what the method of disposal is."

Tackling the problem of his lack of knowledge in a sensible manner, this committeeman, with other members of the Committee, visited plants of different types and then prepared a report which the other laymen could understand. It is so comprehensive and sane that we are publishing it serially in THE AMERICAN CITY *for lay elective officials who face similar problems. The report was written by Allen D. Russell, of Plymouth, Mass., and edited by E. Sherman Chase, of Metcalf & Eddy.*

What Is Sewage?

SEWAGE can be divided into two principal classes, domestic and industrial.

Domestic sewage consists of what goes down the house drain. There are technical terms describing what this is, but if anyone will stop and think what goes down from his bathroom and his kitchen, he will have all the knowledge necessary for this treatise. If he thinks carefully on the amount of water that goes down, he will realize that plain water makes up by far the greater part. As a matter of proof, domestic sewage is 999 parts water and 1 part impurities. In fact, sewage is simply very dirty water.

Furthermore, while there may be one part solid matter as it leaves the house, even that solid matter is broken up by its passage through the various traps and bends before it reaches its destination. Consequently, these solid impurities are of two kinds, depending on whether they are "dissolved," like salt in soup, or "suspended," like the pepper in the same soup. Then again, these solids, suspended and dissolved, may be divided into two kinds, inorganic or mineral solids like very fine sand and like salt, and organic solids like the pepper and like the beef extract in the bouillon. These organic solids are the villains in the plot, because they give off offensive smells, particularly when they decay or rot; and if they happen to be bacteria, they may be a source of disease.

If you have any rain conductors connected with your sewer pipe, that dilutes the mixture even more. If you have a garage with a drain in the floor to carry off the water when you wash your car, that also dilutes the sewage, but it does add oil and grease.

If any one reading this has a summer camp with the old-fashioned outhouse, he can quickly figure out the solid content of sewage by comparing the amount of solid deposited in a month with the use of water per month at home.

Industrial sewage contains some domestic sewage from the conveniences in the factory; it may also contain dyes, acids, alkalis, and other more or less liquid by-products of manufacturing. Sewage from the Peabody, Mass., area, where there are many shoe factories, contains scrap leather and grease.

The things found in sewage which should not be there are almost without number — orange peelings, banana peels, rags, leather, and so on. Because of this fact, sewage for treatment purposes must be considered as consisting of liquid, very small solids or semi-solids, and coarse solids like garbage, etc.

Each class can best be treated in its own way. But first they must be separated. Before going into the method of treating and finally disposing of the sewage, once collected, we should have a definition of terms.

Dictionary of Terms

Sewage—All of the stuff that is cast off by a city.

Liquid—That part of the sewage which is liquid.

Semi-solid—That part which was

originally solid but which has become partially dissolved or broken up, so that it will pass a coarse screen.

Solids—That part which will not break up or pass a coarse screen.

Settling Tank—A tank for separating liquids from heavy solids and semi-solids.

Grit Tank—A tank similar to the above that separates only the heavier solids such as nails, buttons, sand, gravel, etc.

Skimmer Tank—A tank similar to the above that allows grease and floating objects to rise to the surface, where they can be skimmed off. The amount of separation depends on the speed with which the sewage passes through the tank. The name shows the purpose only. A skimmer tank must have a removable cover.

Effluent—The more liquid part of sewage after treatment or separation.

Sludge — The heavier, thicker part of the sewage that is being, or has been, treated.

Bubble—The commotion on the surface over a sea-disposal outlet.

Boil—Same as bubble.

Interceptor—A large pipe that collects from many smaller sewers.

Imhoff Tank—A tank for separating liquids and semi-solids and digesting the sludge.

Comminutor—A machine for chopping up sewage to break up the semi-solids and most solids.

Trickling Filter—A filter made of coarse stone or sand or both, over which liquid sewage is sprayed.

Intermittent Sand Filter—Beds of sand on which liquid is piped and through which it filters, or on which solids and sludge are piled to drain; called intermittent because several are built, yet they are used in turn, number one perhaps being cleared while number two is draining and number three is being filled.

Land Disposal — Treating and disposing of solids on land.

Sea Disposal—Treating or not treating, and forcing out to sea.

Pressure or Force Line—Any pipe through which the sewage is being pumped.

Disposal Systems

There are two systems of disposal which appear to be totally different—sea disposal and land disposal. In the first, sewage is gathered and pumped or allowed to run by gravity into the sea. In the second, the sewage is gathered and pumped or allowed to run by gravity to a treatment plant on land.

Actually, many sea - disposal plants treat their sewage to some degree before sending it to sea. At Salem, Mass., it is run through long tanks which, because their capacity is greater than that of the sewer pipe, allow the sewage to slow down for a while. The grease is skimmed from the surface, and the sludge or semi-solids and solids sink to the bottom. There are two tanks, and when one is filled with sludge the stream is diverted to the other while the first is dug out. When the second is filled, the stream is diverted to the first tank and the second is cleaned.

The liquids which leave these tanks are then strained through coarse strainers, and the non-floating yet non-sinking substances like rags, orange peels, leather, and so on, are removed before they get into the pumps. The strained liquid, which contains little visible solids but bits of toilet paper, is then pumped out to sea.

The sludge from the bottom of the tanks is then carted away and is used by farmers. Its fertilizer value is very low, but it makes a good humus or mulch to mix with sandy soil to help retain moisture and to build up a loam.

The material removed from the bar screen is pressed into small bales and carried well out to sea, where it is dumped overboard. It sinks very quickly and is seen no more.

On the other hand, the land plants either send their effluent (trick name for treated or partly purified sewage) down to the sea through some stream, or allow it to seep through sand filters, from which it eventually reaches the sea, possibly by way of natural streams.

Almost any combination of land and sea disposal can be used. The best method depends on local conditions, cost to build, and cost to operate.

General Requirement

No matter what system of disposal may be used, the sewage must first be collected. There is probably little need of discussing that side of the question. The houses and other buildings empty into a sewer in the street. The street sewers gradually run into larger and larger mains, following the natural drainage valleys, as does rain-water in the surface drains. Eventually these collecting drains reach the lowest point in the town or city, which is usually the sea front or river front. Sometimes there are several such outlets, which empty into the sea or river at various points.

If all the sewage converges at one point, there is no necessity for an intercepter. If, however, there are several such points, an intercepter must be built to connect all the outlets and lead the sewage to one point. At this gathering point, if pumping is necessary, there is usually a receiving tank or reservoir, though in some places gravity is enough to carry the sewage away. If there is not sufficient gravity to carry the sewage to sea or to a treatment plant, a pump must be installed to force the sewage to the desired location.

Up to this point all systems are about the same. As at Salem, Mass., there may be some treatment before the sewage is pumped out to sea; or, as at Marblehead, Mass., it may be sent along with no treatment. In either case the sewage is raw; that is, it contains all the bacteria and other impurities common to sewage, and no effort has been made to purify it. The bacteria are destroyed in part by the action of sunlight, and in part dispersed in the sea water, where they die off rapidly.

In all the sea-disposal plants visited by us, the discharge pipe ends in one opening turned up toward the surface of the sea. I suppose this is intended to keep the end of the pipe from being blocked with sand. In the case of some sea outlets, there are a number of openings to bring about quicker dispersion and less concentration of the sewage.

A diver can descend to the windward of a single outlet and walk up to the very point of discharge without coming in contact with the sewage. All he sees is a column of

sewage shooting towards the surface and spreading out like a mushroom or umbrella over his head. On the surface, 20 to 40 feet above, however, the discharge causes a boil, much as when a hose is left running in a bucket of water, and the offensive bits of paper, etc., may come to the surface.

If the outlet is divided into several branches, or if a hat of some sort were placed over the outlet, it would make the diver's work less pleasant but send the sewage out horizontally and over a greater area and do away with the boil.

Most of the toilet paper and small particles of matter will sink to the bottom without coming to the surface to be seen and cussed at by those who sail the sea in ships. Where it is possible to do so, outlets should be arranged to bring about quick mixing with the sea water, as nearly invisible as possible.

One Variation—Storage

There is one variation in sea disposal which should be mentioned. This system is in use at the Moon Island plant of the Boston Metropolitan System. Since Boston is really quite far inland, its harbor being partially enclosed by Nahant and Hull and studded with islands, the officials, to save the expense of running a sewer ten miles out to sea, converted Moon Island into a storage place. The sewage is held here in big tanks on the incoming tide, so that it will not wash up on the beaches. When the tide is on the ebb, the sewage is discharged into the harbor, and in theory is carried out by the tide, never to return.

Comminutor

One of the more recent inventions in the sewage-disposal field is the comminutor. Screens of various types have been in use for a long time. The oldest type is a simple bar screen, which may be seen in front of the intake of any water-driven mill. It consists of iron bars whose thickness and spacing depend on the problem to be solved. These catch the larger objects and keep them out of the pumps. From time to time the screen is raked free of débris, and the material is burned or otherwise disposed of.

There are also sliding screens which grind up the softer solids but which still have to be raked. The rakings from such screens are one of the worst problems in sewage disposal. It is difficult, for example, to burn orange peels.

Lately, a machine has been introduced known as a comminutor, which in effect is a combination of screen and powerful grinder like a meat grinder. This machine can be installed in any system just ahead of the pump and it will chew up almost anything that gets into a sewer.

The solid matter ground up by this machine can be run right along with the liquid and sludge through whatever treatment or disposal is being used. The particles are so fine that, even if discharged without further treatment, they are virtually invisible. Furthermore, they are in the finely divided state in which they can be easily attacked by the treatment processes.

Bacteria and Their Treatment

It is close enough to fact to say that all sewage contains bacteria. Some of these bacteria come from sick people and are dangerous, but most of them are harmless germs everywhere present in nature, but particularly abundant in material rich in organic matter upon which they feed; hence their large numbers in sewage. These bacteria thrive as long as they remain in raw sewage, but tend to die off when the food material is scarce or has been removed. Furthermore, there are certain purifying bacteria which feed upon the organic matter in sewage. Some of these bacteria work best in the absence of oxygen, but produce foul odors and turn the sewage, which is usually gray in color, into a black ill-smelling liquid. Other of the bacteria work best in the presence of oxygen, and when they purify sewage the process goes on without obnoxious conditions. The two processes are like burning coal or wood with and without enough draft to supply the oxygen of the air in sufficient quantity to avoid smoke.

In a nutshell, the whole treatment of sewage is, first, to settle out undissolved solids; second, to change objectionable dissolved organic solids into unobjectionable mineral matter, with the aid of oxygen from the air and good bacteria; and, third, to rot or digest the settled-out solids or sludge so as to produce an earthy, humus-like material. During these processes most of the harmful bacteria die off or are destroyed. Complete destruction of such bad germs can be brought about by putting into the sewage effluent comparatively small amounts of chlorine gas.

Of course, bacteria can be removed from the liquid portion by filtration or by certain chemicals. Once the sewage has been screened or comminuted, the semi-solids or sludge becomes the main problem.

Tanks

In most sewage-disposal systems, tanks are used, and in almost all studies and surveys, tanks are considered. They call them primary settling tanks, secondary settling tanks, final settling tanks, grit tanks, grease tanks, skimming tanks, Imhoff tanks, storage tanks, and so on; but don't get confused about them.

It seems hardly necessary to point out that a tank is a large waterproof device for holding liquids. It is much larger than the pipes leading into or out of the tank. It must be obvious that if sewage enters a tank intake at twenty miles an hour, once in the tank, its speed will be greatly reduced, the exact reduction depending on the relative size of the intake pipe and the tank. It is also obvious that material can be taken out of the tank as fast as it comes in, and if the outlet pipe is the same size as the intake pipe, the speed of the sewage will be the same in both.

Every tank, whatever its purpose, has the above points in common. The actions of tanks are all the same in this respect. When the sewage slows down, gravity can get in its action. Grease and sand and water, which up to this point have been whirled along together, begin to separate. The grease and oil rise to the surface, the heavy material sinks to the bottom. The extent of separation depends on the size of the tank, which of course sets the speed at which the sewage

(*Continued on page 66*)

New Police Radio at Kansas City

More Power and Clarity

By Roy DeShaffon
Police Lieutenant in Charge of Radio, Kansas City, Mo.

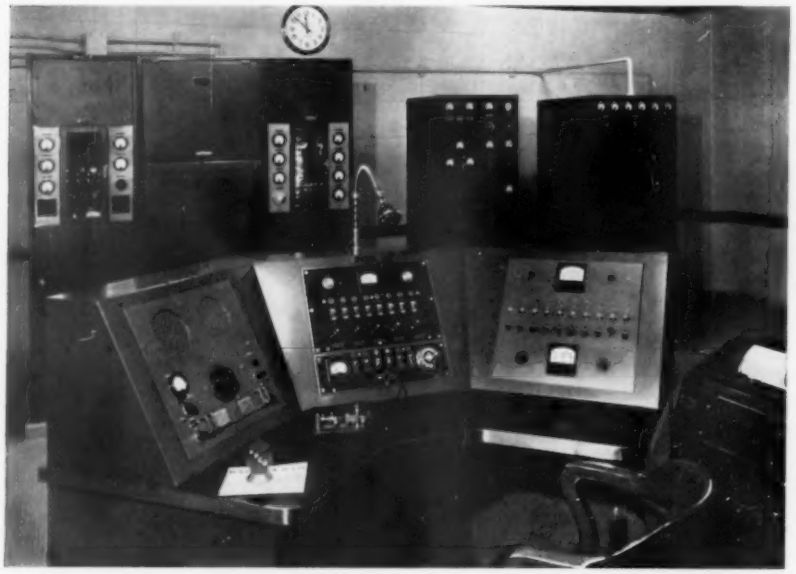
THE most complete and elaborate layout of police radio equipment in the country—that's KGPE, the police radio station at Kansas City. Facilities to meet every conceivable communication need are at the fingertips of this modern police department, which recently rounded out its complement of equipment with the installation of a new Western Electric transmitter and associated speech input equipment.

The transmitter room in the new police headquarters building, floored with tile, and with walls and ceiling of acoustic paneling, provides plenty of space for the equipment arranged within it. Along one side of the room are three transmitters—the new Western Electric telephone transmitter, the 10-channel telegraph transmitter, and a 500-watt radio telephone standby. In the center of the room is the control desk, a thing of beauty designed to afford the operator the maximum of control with a minimum of effort. Near the wall to the left of the control operator stands the audio frequency panel assembly, whose five bays hold more equipment than is usually found in a good-sized broadcasting station.

The radio operator at the control desk in the transmitter room has complete observation and control over the entire system. In the dispatchers' studio next to the transmitting room are located the main controls for the radio telephone transmitting equipment.

The officers in the cars talk back to the dispatchers by means of ultra-high-frequency equipment. The signals from these mobile transmitters are picked up by any of ten remote receivers installed in various locations about the city. The outputs of these receivers are connected by telephone lines to the headquarters building and amplified and reproduced by several loudspeakers, one of which is located in the dispatchers' studio.

One of the most important features of the entire system is an ingenious filter unit, designed by Bell Telephone Laboratories, which permits simultaneous transmission of the telephone and telegraph transmitters from a single 135-foot Blaw-Knox vertical antenna erected on the top of the new headquarters building.



Above — This Antenna Transmits Two Messages from Two Transmitters Simultaneously, by Means of a Specially Designed Checking Unit Devised by Bell Laboratories. Left—The Control Desk Panels Are: at Left, Telegraph Receivers, Control Panel; Upper Center, Telephone Transmitters; Right, Ultra-High-Frequency Remote Receivers; Far Right, the Teletype Equipment. The Telephone Is for One- and Two-Way Communication Between Headquarters and Cars; the Telegraph Is for Long-Range Communication with Other Police Departments

We find that our new transmitting equipment with the highly efficient antenna system has increased considerably the area we can cover with good service over the old arrangement. The quality of transmission is excellent. I had occasion to drive down Highway 50 toward St. Louis and found that KGPE had a very fine clear signal as far as Sedalia, Mo., 80 miles from Kansas City; previously our limit had been Warrensburg, 50 miles.

2,500 *Uniform Signs*

A NEW city ordinance has been passed in St. Joseph repealing all previous traffic ordinances. It is a model ordinance approved by the National Safety Council, and covers every angle of the traffic problem presented by a city of 80,000. With police cooperation it should smooth out traffic difficulties.

We take bids July 6 on a project planned to eliminate all confusion caused by obsolete signs now standing. This project calls for the complete installation of some 2,500 uniform traffic signs on uniform metal posts and the complete removal of all obsolete signs and posts.

JEWELL T. COOK,
Traffic Engineer, St. Joseph, Mo.

Water Rates and Service Charges

1939—Part V

Covering Domestic and Industrial Meter Rates, Discounts and Penalties, Installation Charges, Fire Hydrant Rentals and Fire Sprinkler Costs

Ironwood, Mich.

Present population	14,299
Population served	20,000
Number of active services	3,250
" " meters	3,250
" " hydrants	365
Miles of water main	55

Bills for metered services are due on the 1st month when rendered and must be paid within 30 days. A penalty of 10% is added and the water may be shut off for non-payment at that time. A charge of $1.00 is made for the renewal of the service. The meter rates are:

First 2,500 cu. ft.	$ .30	per 100 cu. ft.
Next 10,000 " "	.15	" " " "
" 20,000 " "	.12	" " " "
Balance	.10	" " " "
Minimum	1.05	" quarter

The rates for consumers in the township, outside the city, are:

First 2,500 cu. ft.	$ .30	per 100 cu. ft.
Balance	.20	" " " "
Minimum	1.50	" quarter

There is no service charge other than the minimum rate per quarter on city or township rates.

At the request of the consumer the Water Department will test a meter providing a deposit of $2.00 is made. The deposit is returned if the meter is found to be registering under 98% or over 102%; otherwise the $2.00 is retained to cover the cost of the test. If a meter is over-registering, an equitable adjustment is made in the water bill.

Applications for water connections must be made in person at the office of the Water Department by the owner or his agent. A statement completely covering the purpose for which the service is to be used, together with a legal description of the property, is required. When the service rate is fixed or the cost of service is estimated, payment must be made by the applicant before the service is tapped. No water is turned on until all charges against the premises are paid, including water used for building purposes. No one but the Water Department is allowed to do any work in the street from the main to the property line, and no person except a licensed plumber is permitted to do any work on service lines or fixtures connected with the water system in that part beyond the Water Department's installation. All service prices cover not less than ¾" diameter.

The charges for new services are $20 when it is laid in the sewer ditch, $25 in a special water ditch.

A hydrant rental of $15 each per year is charged to the city by the Water Department.

E. M. McHugh,
Supervising Engineer, Ironwood Water Department.

Struthers and Poland, Ohio

Present population	17,500
Population served	17,500
Number of active services	2,669
" of meters	2,707
" " hydrants	178
Miles of water main	32.5

The Ohio Water Service Co., with a plant at Struthers, supplies water to the two towns of Struthers and Poland, with identical rates prevailing in each. A minimum charge of $3.00 per quarter is made on each metered service, with 1,500 cu. ft. of water allowed. Other rates are as follows:

First 5,000 cu. ft. per quar.	$2.00	per 1,000 cu. ft.
Next 15,000 " " "	1.50	" " " "
" 25,000 " " "	1.00	" " " "
All over 45,000 cu. ft. per quar.	.80	" " " "

All services and meters are owned, installed and maintained by the property owner, under company supervision.

The cities are charged a hydrant rental of $35 per year for each hydrant. Rates have not been established for automatic sprinkler systems, since there are at present none in use.

L. P. Sharpe,
Superintendent, Ohio Water Service Co.

Oelwein, Iowa

Present population	7,794
Population served	6,625
Number of active services	1,968
" " meters	1,960
" " hydrants	111
Miles of water main	22.8

The water rates of the city of Oelwein cover both domestic and industrial consumers, and the minimum charge is $1.50 per quarter. In addition to this, all metered services have the following charges:

First 800 cu. ft.	$ .30	per 100 cu. ft.
Next 1,700 " "	.22½	" " " "
" 4,500 " "	.15	" " " "
" 7,000 " "	.11¼	" " " "

The owners of property make application to plumbers for installation of water service. The city then issues a permit to the plumber to tap the water mains and install the service. A charge of $1.00 for tapping the main is made to the plumber.

There are no rental charges for fire hydrants in existence, and no charges for private sprinkler heads.

C. D. Shippy,
City Clerk and Superintendent, Water Works, Oelwein, Iowa.

Alcoa, Tenn.

Present population	5,365
Population served	5,600
Number of active services	1,161
" " meters	1,213
" " hydrants	191
Miles of water main (approximately)	29

The following rates are charged by the Knoxville Power Co. for the different classes of service rendered. Under Schedule A the following rates are charged per 1,000 gals. for all water used except as otherwise provided, or where the minimum charge governs:

First	10,000 gals.	$ .30	per 1,000 gals.
Next	10,000 "	.28	" " "
"	20,000 "	.26	" " "
"	20,000 "	.24	" " "
"	20,000 "	.22	" " "
"	20,000 "	.20	" " "
"	50,000 "	.18	" " "
"	50,000 "	.16	" " "
"	100,000 "	.14	" " "
"	100,000 "	.12	" " "
Excess of	400,000 "	.10	" " "

A discount of 10% is allowed on bills paid within 10 days from their date, except as otherwise provided in the following schedules. The minimum charge for water service, based on the size of meter employed, and payable monthly, is as follows:

½" or ⅝" meter	$12.00	per year
¾" meter	18.00	" "
1" "	36.00	" "
1½" "	84.00	" "
2" "	144.00	" "
3" "	324.00	" "
4" "	516.00	" "
6" "	1,296.00	" "
8" "	1,800.00	" "

Each minimum charge entitles the consumer to the number of gals. per month for which the minimum charge would pay at the rate in the first schedule above, but no discount is allowed on service or minimum charge bills.

If a consumer within twelve months from the date of the last test of a meter should doubt its correctness, he may have the meter tested by making written application to the company and making a deposit to defray the cost. If the test shows that the meter registers with an error of not more than 4%, the consumer must pay the cost of the test, but if the test

shows an error of more than 4%, the deposit is refunded and the consumer's account is adjusted. The deposits for meter tests are as follows:

⅝" to 1"	meters	$1.00
1¼" " 2"	"	2.00
3"	"	5.00
4"	"	10.00
6"	"	15.00

If a premises has been supplied with service and a consumer desires a supply of water, he must sign an application for the service, and if not the owner of the property within the district served by the company, he must make a cash deposit as follows:

$2.50 for a ⅝" connection
$5.00 " " ¾" "
$5.00 for each ¼" of diameter of connection exceeding ¾"

On this deposit the company pays interest at the rate of 6% per year, provided that the deposit remains with the company for twelve consecutive months or longer. The deposit is refunded upon written notice to discontinue the service.

The owner is required to furnish and install the service line beyond the curb box for each consumer, using lead, galvanized or cast iron, and to install a stop and waste cock immediately inside the building or housing wall. The owner is further required to provide a suitable housing for each meter and to be responsible for any damage to the meter; otherwise the company maintains and keeps in repair and adjustment all meters which it furnishes for service except for private fire lines, on which a Detector meter furnished by the consumer must be installed subject to the approval of the company.

Each fire hydrant installed for the city is billed at $55 per year, on which a 5% discount is allowed if bills are paid within 10 days from their date. Water for public sewer flush tanks is billed at 15c per 1,000 gals.

Private fire protection service charges are payable monthly, as follows:

Each 4"	fire service connection	$50.00 per year
" 6"	" "	150.00 " "
" 8"	" "	285.00 " "
" 10"	" "	440.00 " "
" 12"	" "	625.00 " "
"	fire hydrant	10.00
"	sprinkler head	.02

Water used through these services must be paid at the meter rates given in the first table, except that a 5% discount is allowed on bills paid within 10 days from their date. When water for both industrial and fire service is taken through one meter, all water must be paid for at the rates in the first table with a 5% discount allowed on bills paid within 10 days from their date. In addition, a service charge is made for the connection and all hydrants and sprinkler heads as shown in the fire protection schedule. These further charges do not entitle the consumer to use any water whatsoever except as paid for under the first schedule. All connections are installed at the consumer's expense in accordance with the company's requirements, and no connection is made without a meter.

H. C. BRISTOL,
Superintendent, Water Department,
Knoxville Power Co.

Lagrange, Ga.

Present population	24,000
Population served	24,000
Number of active services	3,661
" " meters	3,559
" " hydrants	389
Miles of water main	21

The water rates charged by the Water, Light & Gas Department of Lagrange are:

First	20,000 gals.	$.30 per 1,000 gals.
Next	80,000 "	.20 " " "
"	100,000 "	.15 " " "
"	500,000 "	.12 " " "
Over	700,000 "	.10 " " "

The minimum monthly bill is $1.00.

Upon making application for service, a consumer deposits $2.50 with the Department and then, when the account is discontinued, the deposit is refunded after deducting unpaid balances due. All accounts not paid by the 15th of the month in which the account is due are considered closed and the service is disconnected on the 20th. A fee of $1.00 is charged for reinstatement of the service.

There is no charge to the city for fire hydrants. Private fire hydrants are billed at $35 per year each and a minimum charge for fire service of $50. Sprinkler heads are charged at 6c each per year. When fire service is supplied through a meter, the regular water rates apply.

G. H. SARGENT,
City Engineer.

Miami Beach, Fla.

Present population	18,000 (Winter, 65,000)
Population served	18,000 (Winter, 65,000)
Number of active services	4,923
" " meters	5,000
" " hydrants	475
Miles of water main	97.46

The meter rate for water supplied by the Miami Beach Water Department is uniform for all quantities at 25c per 1,000 gals. Every water-supply service has a monthly minimum service charge, depending upon the size of the service pipe, which entitles the consumer, without excess charge, to receive the amount of water shown in the following table:

	Monthly Minimum	Gals. Allowed Per Month
¾" service	$1.50	6,000
1" "	2.00	8,000
1½" "	3.00	12,000
2" "	4.50	18,000
3" "	10.00	40,000
4" "	20.00	80,000
6" "	30.00	120,000
8" "	50.00	200,000

In the case of a defective meter the quantity of water supplied since the last reading is determined by averaging the registration of another meter for the period of twenty days or of the same meter for a like period after it has been repaired and tested, or by mutual agreement the quantity of water supplied may be prorated upon the previous corresponding period from the date of the last meter reading. The owner or consumer is fined $5.00 every time a seal on any meter or its coupling is broken or removed. The Water Department reserves the right to shut off the supply and discontinue the service after the second offense for as long as the owner of the property or the consumer at the premises continues ownership or residence.

A 5% discount is allowed on all water bills paid within 10 days from the date of the bill. Water service is discontinued without further notice on all accounts not paid within 10 days of date of bill.

When an owner or consumer makes application for water service, he is required to make a deposit for guarantee of payment in accordance with the size of the service, as follows:

¾"	service	$10.00
1"	"	15.00
1½"	"	30.00
2"	"	50.00
3"	"	125.00
4"	"	300.00
6"	"	500.00
8"	"	1,000.00

The application is considered a binding contract upon both the owner and the Water Department as soon as the Department has made the service connection complete. All meters are furnished and installed by the Water Department at its own expense. The tapping charges are as follows:

¾"	tap and service	$20.00
1"	" "	25.00
1½"	" "	45.00
2"	" "	75.00
3"	" "	100.00
4"	" "	125.00
6"	" "	150.00
8"	" "	200.00

A fine of $5.00 is imposed if the curb cock is used by anyone except an employee of the Water Department, and upon the second offense the Water Department reserves the right to discontinue the service. There is no separate charge made for shutting off the water supply to any premises, except when it is shut off for non-payment of a delinquent account, and then a turn-on charge of $2.00 is made.

The Water Department installs at its own cost standard fire hydrants having 2½" hose nozzles and one 4½" steamer nozzle, and a 6-inch cast iron service pipe from the Department's street main whenever requested by the city. A rental charge of $7.00 per year for each fire hydrant is made to the Fire Department, but as each Department is owned by the city, it is only a matter of accounting.

Private fire services are installed by the Department for the owner at actual cost plus 10%. A check-valve is required on every connection, to prevent water from secondary supplies running back into the city mains. No charge is made for water used through such services.

H. H. HORN.
Superintendent, Water Department.

Faribault, Minn.

Present population	13,890
Population served	13,500
Number of active services	2,008
" " meters	2,048
" " hydrants	199
Miles of water main	45.92

The water rates in Faribault carry a minimum charge of 50c per month, and the regulations require that no consumer may be billed in excess of the minimum under the next lower rate. The water bills are payable on the 16th of the month and there is no discount or penalty. The rates are:

	Per 100 Cu. Ft. Per Month
5,000 cu. ft. or less	$ .30
5,000 to 15,000 cu. ft.	20
15,000 to 30,000 " "	10
30,000 cu. ft. or over	075

No charge is made for water used for public purposes in city buildings or for public fire hydrants.

The Water Department makes all taps for domestic services for a flat charge of $3.00 each. Licensed plumbers install the services complete from the main.

There are sixteen 6-inch automatic sprinkler services in the city, for which no service charge is made.

I. E. WILSON,
Commissioner.

Manville, N. J.

Present population	7,000
Population served	3,500
Number of active services	610
" " meters	97
" " hydrants	123
Miles of water main	16

The borough of Manville has the following fixed water meter rates:

First	30,000 gals.	$ .35 per 1,000 gals.
Next	100,000 "	.30 " " "
All over	130,000 "	.15 " " "

Rates to larger consumers are set by a resolution of the Mayor and the Council.

The Water Department runs a copper service pipe from the main to the inside of a cellar wall at cost to the consumer but with no charge for the tap.

A $9,000 per year flat rate is charged the borough for the rental of hydrants for fire protection. Charges for private automatic sprinkler systems are as yet not established.

CHARLES M. KRASSY,
Superintendent, Water Department.

Salinas, Calif.

Present population	14,500
Population served	14,500
Number of active services	3,579
" " meters	3,636
" " hydrants	165
Miles of water main	42 17

Residents of Salinas are supplied with water by the Pacific Gas & Electric Co., Coast Valleys Division, which has two sets of rates for metered service; those for general use and a special set of irrigation rates for gardens, fruit or field crops alone or combined with household use. They are:

General Use

	Per 100 Cu. Ft.
First 500 cu. ft. used per month	$ .20
Next 2,500 " " " "	.15
For use above 3,000 cu. ft. used per mth.	.06

Irrigation Use

	Per 100 Cu. Ft.
First 500 cu. ft. used per month	$ .20
Next 500 " " " "	.15
For use above 1,000 cu. ft. used per mth.	.06

These rates become effective upon the actual installation of a customer's meter, except flat rates for fire service, which become effective at the next regular billing date.

There is a monthly minimum rate for each service metered, as follows:

⅝" meter	$1.00
1" "	1.50
1½" "	2.25
2" " and larger	3.00

When different and independent consumers are served through one meter, the minimum shall not be less than 75c per month per consumer.

The company charges the city of Salinas a general flat rate of $100 per month for the use of hydrants for fire protection, and an additional charge of 50c per month per hydrant.

G. A. PEERS,
Superintendent, Pacific Gas & Electric Co., Coast Valleys Division.

Hoquiam, Wash.

Present population	13,000
Population served	13,000
Number of active services	2,937
" " meters	2,900
" " hydrants	154
Miles of water main	22

The Water Ordinance of the city of Hoquiam requires that all premises within the city limits be metered at the following rates:

First	1,200 cu. ft.	.37 5c per 100 cu. ft.
Next	300 " "	.36 " " " "
"	1,100 " "	.33.75 " " " "
"	1,400 " "	.30 " " " "
"	1,000 " "	.27 " " " "
"	1,000 " "	.25 " " " "
"	1,000 " "	.23.8 " " " "
"	3,000 " "	.22.5 " " " "
"	5,000 " "	.22 " " " "
"	10,000 " "	.21 " " " "
"	5,000 " "	.20 " " " "
"	10,000 " "	.19.5 " " " "

The above rates are for all but manufacturing purposes, for which the special rates below are charged, applicable to manufacturers consuming at least 6,666⅔ cu. ft. monthly and maintaining a payroll of ten men:

First	3,000 cu. ft.	.15¢ per 100 cu. ft.
Next	3,000 " "	.15" " " " "
"	1,000 " "	.14 5" " " " "
"	3,000 " "	.13 5" " " " "
"	5,000 " "	.13 " " " "
"	5,000 " "	.12 " " " "
"	5,000 " "	.10 5" " " " "
"	5,000 " "	.9 5" " " " "
"	5,000 " "	.8 5" " " " "
"	5,000 " "	.7 5" " " " "
"	10,000 " "	.7 5" " " " "
"	50,000 " "	.6 " " " " "
All over		.6 " " " " "

The minimum monthly rate for all meters owned by the city is established at $1.25 per month. Flat rate for service beyond the city limits where meters are not installed is fixed at $1.25 per month, and a minimum rate of $1.00 per month for all privately owned meters. The meter rate outside the city limits is the same as for services within the city limits.

If the accuracy of a water meter is questioned, it is removed at the consumer's request and tested in his presence. If the test shows an error against the consumer of more than 3%, the excess of the consumption on the three previous readings is credited to the consumer's meter account and the Water Department bears the entire expense of the test, and the deposit for the test, listed below, is returned. If no error is found, the deposit is retained. The test charges are:

½" meters	$2.50
¾" "	2.50
1" "	2.50
1½" "	3.00
2" "	3.50
3" "	4.00
4" "	5.00
6" "	15.00

Upon receipt of an application containing the name of the consumer, description of the lot, block and addition and the official house number of the premises, with the required deposit, the Superintendent of the Water Department orders the service pipe installed. Where a meter or curb cock is located within 10 ft. of the property line, all service pipe and connections from the curb cock or meter must be installed and maintained by the owner of the property. No service connections less than ¾" in size are installed for residences, but larger services for other purposes are installed upon application. The fees for the installation are:

¾" service on an unimproved street or alley	$6.00
Gravel street or alley	8.00
Paved street or alley	20.00
Cost of each additional foot in excess of 20 ft.	
Unimproved street or alley	.15
Gravel street	.20
Paved street	.50
1" service on an unimproved street or alley	8.00
Gravel street or alley	10.00
Paved street or alley	22.00
Cost of each additional foot in excess of 30 ft.	
Unimproved street or alley	.20
Gravel street	.25
Paved street	.55

Where any single water main exists on any street or alley, all charges for laying a ¾" or 1" service pipe are calculated as if the water main was located in the center of the street or alley. For sizes larger than 1", the actual cost of labor and materials in laying the service and repairing the walks, roadways or pavement, is charged.

If a consumer makes a written request for discontinuance of water service, he must pay all arrearages on water rates, together with a 50c charge for the shut-off. No remission of rates is made for vacancy of a property unless advance notice is given, and it is for a period of not less than one calendar month. If services are shut off for a violation of the Water Ordinance, a charge of $2.00 is made for shutting off and turning on the water.

The charge for flat or metered fire service is the ready-to-serve charge and a charge for the water consumed. The ready-to-serve charge for different size services for fire protection, as follows:

1½" diameter service	$1.50 per month
2" " "	2.00 " "
3" " "	2.50 " "
4" " "	3.00 " "
6" " "	5.00 " "
8" " "	7.00 " "
10" " "	10.00 " "

The standby charge for each privately owned fire hydrant is a flat rate of $1.50 per month. Premises not obtaining all or the major portion of water used on the premises for domestic or commercial purposes from the city are required to pay the following rates for a fire service connection, either metered or flat rate, for each fire connection:

1½"	$3.50 per month
2"	5.00 " "
3"	7.00 " "
4"	9.00 " "
6"	15.00 " "
8"	21.00 " "
10"	30.00 " "

There is no charge for fire hydrants used by the city.

W. L. LOVEJOY,
City Engineer and Water Superintendent.

Redwood City, Calif.

Present population	13,500
Population served	16,000
Number of active services	4,300
" " meters	4,336
" " hydrants	308
Miles of water main	99

Two sets of rates and minimum charges are in effect at Redwood City for services within the city and outside the city. The rates for services within the city are:

First	3,300 cu. ft.	$ .25 per 100 cu. ft.
Next	30,000 " "	.20 " " " "
"	300,000 " "	.17 " " " "
All over	333,300 " "	.15 " " " "

The minimum amount of a monthly bill charged and collected for service depends on the size of the meter, as follows:

⅝" meter	$1.00
¾" "	1.50
1" "	2.25
1½" "	4.50
2" "	7.00
3" "	14.00
4" "	23.50
6" "	42.50

A discount of 10% is allowed on all bills paid on or before the 15th of the month following the month during which service has been rendered.

Rates for water consumed outside the limits of the city where no extra pumping expense is required are as follows:

First	3,300 cu. ft.	$ .288 per 100 cu. ft.
Next	30,000 " "	.252 " " " "
Over	33,300 " "	.20 " " " "

The minimum bills for each month for services outside the city where no extra pumping expense is incurred are:

⅝" meter	$1.25
¾" "	1.75
1" "	2.50
1½" "	5.00
2" "	7.50
3" "	15.00
4" "	25.00
6" "	45.00

A discount of 10% is also allowed on these bills if paid on or before the 15th of the following month.

A third set of rates, for consumers outside the city limits, where extra pumping expense is required, namely, in the Emerald Lake district, are as follows:

First	1,000 cu. ft.	$ .40 per 100 cu. ft.
Next	2,000 " "	.37 " " " "
All over	3,000 " "	.34 " " " "

The minimum charges per month for this service are:

⅝" meter	$2.00
¾" "	2.40
1" "	3.00
1½" "	5.00
2" "	7.50
3" "	15.00
4" "	25.00
6" "	45.00

There is a discount of 10% for bills paid before the 15th of the month.

A consumer may, on five days' notice, require the Water Department to test his meter. When a consumer whose monthly bill is less than $100 requests a meter test within six months after the date of installation of the meter, he is required to make a deposit of $1.00 for a meter of 1" size or less, or $2.50 for meters larger than 1". The deposit is returned to the consumer if the meter is found to register more than 2% fast under conditions of normal operation.

Applications for water service are made in writing and show the location of the premises, the date that service is desired, and other necessary data. The applicant makes a deposit of $10 to defray the expense of connecting with the main and carrying the service pipe to the nearest point of the property line. If the application is for renewal of service which has been temporarily discontinued, no charge is made except when the service is discontinued for non-payment, in which case a charge of $1.00 is made for turning on. All meters are installed by the Water Department and are placed in suitable meter boxes located in the sidewalk. Installations are made by the Water Department at its expense and remain the property of the Water Department.

C. L. DIMMITT,
City Manager, Redwood City, Calif.

Hinton, W. Va.

Present population	6,000
Population served	5,800
Number of active services	1,136
" " meters	1,203
" " hydrants	73
Miles of water main	16.66

There is no discount for prompt payment of water bills in Hinton, but all accounts are payable on or before 10 days from the date of the bill. Rates for general domestic, commercial and industrial services are:

	Per 1,000 Gals.
First 10,000 gals. used per month	$0.52
Next 10,000 " " " "	.45
" 10,000 " " " "	.39
All over 30,000 gals. used per month	.33

Special rates for service to hydraulic elevators, water-cooled refrigerating units of 5 or more horsepower, special railroad contracts, etc., are:

	Per 1,000 Gals.
First 40,000 gals. used per month	$0.33
Next 40,000 " " " "	.29
All over 80,000 gals. used per month	.26

A minimum charge based on the size of meter used is made for all metered services, as follows:

⅝" meter or less	$1.50 per month
¾" "	1.90 " "
1" "	2.50 " "
1¼" "	3.15 " "
1½" "	3.75 " "
2" "	5.00 " "
3" "	7.50 " "
4" "	10.00 " "
6" "	18.00 " "

In addition to charges based on the foregoing schedules, a charge of 30c per month per consumer is made as an emergency charge.

Service lines from the main to the property line are installed by, and are the property of, the company, as are meter settings and meters which are set at the curb. Tenants are required to make a deposit before meters are installed, but property owners are not. All services are metered. Copper pipe is used for service lines.

The town is charged $125 monthly for the 73 fire hydrants in existence October 1, 1935, and a special rate monthly for each hydrant that has since been added to the system.

The following schedule of rates applies to private fire protection lines, with a discount of 5% if accounts are paid in full on or before 10 days from date of bill:

2" service line	$2.00 per month
3" " "	2.40 " "
4" " "	3.20 " "
6" " "	7.20 " "
8" " "	12.80 " "

A. G. TIMBERLAKE,
Superintendent, West Virginia Water Service Co.

Savanna, Ill.

Present population	5,082
Population served	4,500
Number of active services	1,400
" " meters	1,300
" " hydrants	152
Miles of water main	13.6

The minimum rate for water delivered by the Savanna Water Department is $3.00 per quarter, and the rates for all metered services are as follows:

First	12,000 gals.	$ .25 per 1,000 gals.
Next	21,000 "	.225 " " "
"	60,000 "	.20 " " "
"	210,000 "	.18 " " "
"	450,000 "	.15 " " "
"	750,000 "	.12 " " "
"	1,500,000 "	.10 " " "

A discount of 10% of the current charge is made if the net amount due is paid on or before the 10th day of the month succeeding that in which the water charged for was used. No refund or discount on water rentals is made on account of premises having been vacant or no water used, unless the water has been shut off by the Department upon the written request of the owner or of the consumer.

At the written request of an owner or consumer, the city will test the meter supplying his premises. A deposit of an amount equal to the cost of taking out and resetting the meter, but in no case less than $1.00, is required before the meter is disconnected. This deposit is returned if the meter is found to be registering more than 2% slow or fast; otherwise the deposit is retained by the city to cover the cost of the test. The owner or consumer may be present at the time the test is made.

The city maintains the service pipes from the water main to the curb box, and the property owner is held responsible for the maintenance of all service pipe from the curb box to and on his premises. All leaks of the latter must be repaired immediately. Taps for connections to the water mains are made by the Water Department for the plumber or owner at a cost of $2.50 for each tap in sizes of ¾" and 1", plus the cost of the corporation cocks and tail-piece for copper pipe, which are furnished by the Department at cost plus 10%, provided all excavation is done by the plumber or owner. If the excavation is not properly done, the extra cost of excavation done by Water Department employees is charged to the property owner. Taps must be paid for before they are made.

No water is turned on until all water charges against the premises, including those for water used for building purposes, are paid. When water has been

turned off on account of non-payment of water bills, it is not turned on again until a charge of $1.00 has been paid for such service.

There is no charge to the city for fire hydrants connected to the Water Department mains, nor for automatic sprinkler systems for private fire protection.

E. DEWEY GANTERT,
Superintendent, Savanna Water Department.

Monmouth, Ill.

Present population	8,700
Population served	7,500
Number of active services	2,400
" " meters	1,900
" " hydrants	296
Miles of water main	31 75

All consumers of water from the City Water Works are required to use meters and pay the following rates:

						Gals.
First	10,000	gals. at	57¢	per 1,000	$5.70	for 10,000
Next	10,000	" "	54¢	" "	11 10	" 20,000
"	10,000	" "	51¢	" "	16 20	" 30,000
"	10,000	" "	42¢	" "	20 40	" 40,000
"	10,000	" "	39¢	" "	24 30	" 50,000
"	5,000	" "	33¢	" "	25 95	" 55,000
"	5,000	" "	24¢	" "	27 15	" 60,000
"	5,000	" "	18¢	" "	28 05	" 65,000
"	5,000	" "	18¢	" "	28 95	" 70,000

If bills are not paid on or before the 10th of the month following the month in which service is rendered, they become delinquent and the city may shut off the water, in which case a fee of $1.00 for shutting off the water is added to the bill and is payable immediately.

Whenever a consumer applies for metered service, he is required to deposit $15 for the use of the meter furnished by the city and is entitled to credit to that extent on bills for water used subsequently.

Effective May 1, 1935, all users of the sewerage system of the city who are consumers of water pay the following rates for the use of the sewerage system, based on the amount of water consumption per month:

First	10,000	gals. water at	27¢	per 1,000	gals.
Next	10,000	" "	24¢	" "	"
"	10,000	" "	24¢	" "	"
"	10,000	" "	21¢	" "	"
"	10,000	" "	18¢	" "	"
"	5,000	" "	15¢	" "	"
"	5,000	" "	12¢	" "	"
"	5,000	" "	9¢	" "	"
"	5,000	" "	9¢	" "	"

All water over 70,000 gals. is charged at the rate of 6c per 1,000 gals. A minimum rate of 55c is fixed for all premises that have sewer connections and metered water.

GEORGE M. CROW,
Superintendent, Water Department.

Glen Ridge, N. J.

Present population	8,200
Population served	8,200
Number of active services	1,900
Number of meters	1,975
" " hydrants	231
Miles of water main	18

Water meters are read quarterly in Glen Ridge, and the uniform meter rate for water is $2.50 per 1,000 cu. ft., with a minimum quarterly charge of $2.00. If bills are not paid within 30 days, interest at 6% is added and collected with the bill. If not paid within 60 days, the water may be shut off and not turned on again until the amount of the bill is paid, plus a $2.00 service charge.

All water connections from the curb to a house are put in by the Water Department, and no charge is made for the standard ⅝" meter. Installation charges are as follows:

Supply, including tapping main, corporation and curb cock and curb box:	
¾"	$45 00
1"	55 00
1½"	90 00
Service pipe, curb to house:	
¾"	$ 90 per foot
1"	1 00 " "
1½"	1 40 " "

The Water Department is furnished with offices in the Municipal Building without any charge, and it furnishes the municipality with free hydrant service and free water for all municipally owned buildings, parks and playgrounds, street and sewer work. No charges for private sprinkler heads have been instituted.

A. F. ESCHENFELDER,
Superintendent, Water Department,
Borough of Glen Ridge, N. J.

Madison, N. J.

Present population	8,000
Population served	8,500
Number of active services	1,984
" " meters	1,950
" " hydrants	332
Miles of water main	39

A uniform domestic rate of 22½c per 1,000 gals. of water is charged the residents of Madison, and a special rate of 18c per 1,000 gals. applies to industrial users.

When applications are made for water service, house owners must pay for house connections, as well as for connections to the street mains on all streets.

No rentals are charged for any fire hydrant within Madison Borough, but all installations outside the borough are charged for at the rate of $25 per year for each hydrant. Sprinkler heads for fire protection must be privately installed, at the expense of the property owner, but water used through them is free.

FRANK WATERS,
Superintendent, Water Department,
Madison, N. J.

Griffin, Ga.

Present population	11,000
Population served	16,000
Number of active services	2,274
" " meters	2,274
" " hydrants	274
Miles of water main	38 153

The water rates for Griffin are:

				Per 1,000 Gals
Up to	50,000	gals. per month		$.19
Next	450,000	" "	"	.16
"	500,000	" "	"	.13
"	1,000,000	" "	"	.10
"	1,000,000	" "	"	.09
All over	3,000,000	" "	"	.08

The following minimum water charges are made per month, exclusive of fire service, for which a certain volume of water is allowed:

⅝" or ¾" meter per month			$1 00	per 5,000	gals.
1" meter per month			1 25	" 6,000	"
1¼"	"	"	1 50	" 7,000	"
1½"	"	"	1 75	" 9,000	"
2"	"	"	2 50	" 13,000	"
3"	"	"	4 00	" 21,000	"
4"	"	"	5 00	" 26,000	"
6"	"	"	7 00	" 36,000	"

Special rates for water delivered to consumers outside the city limits are 25c per 1,000 gals. for the first 50,000 gals. per month. The balance is billed at the regular city rates.

The following tapping charges are made when a consumer applies for a new connection:

¾" water connection	$10 00
1" "	15 00
1¼" "	20 00
1½" "	30 00
2" "	45 00

Connections larger than 2" are made on the basis of time and material at cost, exclusive of the cost of the meter. These charges include the service line to the consumer's property. Tapping charges are the same inside or outside the city limits, but the minimum charges for water are 25% more outside the city.

There is no charge for the city's fire hydrants, nor for private hydrants, nor for sprinkler systems attached to the city main.

H. P. POWELL,
Superintendent, Light, Water and Sewerage Department.

Colton, Calif.

Present population	10,000
Population served	11,000
Number of active services	2,642
" " meters	2,642 (Also 40-6 inch irrigation meters
" " hydrants	240
Miles of water main	64

Water consumers in Colton are charged the following rates for water:

First 1,500 cu. ft.	$1 35
1,500 to 48,000 cu. ft.	04875
All over 48,000 cu. ft.	03375

A new water rate became effective March 1, 1939, for consumers outside the city limits. Under it the first 1,500 cu. ft. cost $2.50, and all over 1,500 cu. ft. 10c per 100 cu. ft.

A special irrigation rate of 30c per miner's inch (or approximately 9 gals. per minute) for 24 hours is made to orange groves. All meter readings are billed on the first of each month and if not paid by the 16th become delinquent. When bills are delinquent, the meter is removed, and before it can be reset the entire bill, plus a $1.00 reconnection charge, must be paid.

When meters are installed, a service charge is made, as follows:

	Inside City Limits	Outside
⅝" by ¾" meters	$15 00	$20 00
⅝" " 1½" "	15 00	20 00
1" "	35 00	
1½" "	55 00	
2" "	125 00	
All over 2" "	actual cost of meter plus installation.	

All 2-inch meters are compound meters. All meters are the property of the city, and the charges for various sizes of meters include the tap and pipe in the street to the property line.

No charge is made for fire hydrants connected to the Water Department's mains, nor for automatic sprinkler systems in use for private fire protection.

C. H. MAXWELL,
Superintendent, Water Department.

(To be continued in the August issue)

Public Works as an Aid to Private Investment

By Paul M. Sweezy
Instructor in Economics, Harvard University

Private investment in the past has shown a very close dependence upon three fundamental factors; namely, population growth, the opening up of new territory, and the discovery of basic new industries. There is, furthermore, no reason to assume that the same relation of dependence does not exist today. In the case of all three of these factors the outlook today is definitely discouraging. Population growth during the '30's has been no more than half what it was during the '20's, and it is expected to cease altogether in a few short decades. No significant new territorial areas remain to be exploited. Finally, technological change today seems to be increasingly taking the form of getting more results with less investment. Certainly no great industries such as the railroad or the automobile are in sight.

There are, of course, those who say that this view is unduly pessimistic, that new industries are certain to be forthcoming in the future as they have been in the past. Even if this be granted, however, the conclusion is substantially unaffected. If the inducement to private investment is to be as strong in the future as it has been in the past, new industries must be forthcoming in much larger volume than has heretofore been the case. This follows from the proposition, indicated above and generally concurred in by economists, that population growth and territorial expansion have been major factors in the demand for investment throughout most of our history, but that they are unlikely to play more than a very minor role in the future.

It seems to me clear that an examination of historical trends leads to the conclusion that those who look for more than a purely temporary revival of private investment as a result of this or that change in governmental policy are living in a fool's paradise. Such causal connection as exists between private investment and government policy seems in fact to run in a direction opposite to that envisaged by the theory which we have just mentioned. Many of the policies of government which business men most complain of were entered upon only because private investment had slumped to an intolerably low level and gave every indication of remaining there. Why it should be supposed that the abandonment of these policies would now revive private investment is an unexplained mystery to me.

As to the need for public investment, there is little room for disagreement. Very few people, and least of all those present here today, would be disposed to argue that America stands in no need of such things as better roads, schools, hospitals, low-cost housing, parks and recreation centers, forestation projects, soil conservation operations, etc.

If my argument is sound, the real issue is not whether we shall or shall not have a large-scale public investment program; in the nature of the case no other escape from our present difficulties can be found, short of changing our whole economic system. The really significant questions are rather of a different sort. The most important in my judgment are two in number: Who is to plan and direct the program? and For whose benefit? Here one can do little more than express one's personal preferences.

The two questions are obviously closely related to one another. My basic prejudice is that the program should be planned and directed for the benefit of the people at large, with special attention, however, to that sector of the population, that one-third of the nation, which has never had a share in the conveniences and luxuries of life. And from this I naturally proceed to the further proposition that those in control should share my prejudices to this extent. There are such people in America; some of them hold high office today. The future of the country, I think, depends in no small degree on whether they remain in office and are joined next year by many more who feel and think in fundamentally the same way.

—From a paper on a "Public Investment Program," presented at the 1939 National Conference on Planning.

Sewage Disposal for Laymen

(Continued from page 59)

moves. The larger the tank, the more efficient the separation.

If town A is bothered with sand, they put in a grit tank; while town B, which is bothered with grease, puts in a grease or skimmer tank. They are both built and operated in much the same way. The principal difference is that the grit tank must have the sand dug out from time to time, which may force the use of two tanks side by side so that one can be used while the other is being cleaned. The grease can be skimmed from the grease or skimmer tank without interrupting its use.

Some tanks are equipped with scrapers which sweep the bottom of the tank and plow the heavy material into a sump, where it can be drawn off and thus removed from the tank without stopping operations. Oil, of course, can be drawn off from the top of the liquid through an overflow pipe at the proper level. Liquids are drawn off through a pipe below the grease level but above the level of the solids. In the case of tanks without mechanical devices for cleaning, when the solids accumulate to the point where they work out with the liquid, the tank must be taken out of operation and cleaned.

There are of course other tanks, like the Imhoff tank, which are so built that they carry the purification along to a higher degree. However, we are interested more in tanks as simple storage places or settling chambers. Remember a tank is a tank. The rest of the name usually shows what the people who use it expect it to do.

(To be continued in the August issue)

Extensive Resurfacing Program

Fort Dodge, Iowa, Aimed to Salvage Many Blocks of Badly Worn Pavements on Heavy-Traffic Routes

By J. L. PARSONS
City Engineer and
Superintendent of Streets

THE street-resurfacing program on which the Fort Dodge Street Department has been busy for the past year and a half has preserved 7½ miles of paving at small cost to the city and the taxpayers. If the repair had not been made at this time, complete replacement of the paving at heavy expense to the city and the property owners would have been necessary.

History

Because a large mileage of pavement in Fort Dodge was disintegrating and requiring constant and expensive repairing by the patching method, and because of the limitation of funds, it was decided to adopt a method requiring a minimum of expense. In 1937 several methods were tried: the two-coat asphalt method with a preliminary coat of surface treatment of cold Standard Oil asphalt and, after curing, a second coat of hot No. 6 Standard Oil asphalt, followed by sanding and rolling; and the application of two cold coats of asphalt with a final sanding and rolling, then the application of a single coat of No. 6 hot asphalt and sanding. Similar work was done with a competitive product which did not prove satisfactory.

After the winter season the results indicated that the most effective method was the application of a single coat of hot No. 6 asphalt with sanding and rolling. The application of the preliminary cold coat added little or nothing to the penetration and final results, and caused considerable delay to traffic with added expense. A larger amount of the No. 6 was necessary than for the final coat of the two-coat method, but closing the street to traffic was unnecessary, since one-half was finished at a time and immediately thrown open to traffic. Also, the labor and time were much reduced.

Methods Used in 1938

During our 1938 program a definite system was laid out which worked very effectively. First, the street was swept clean; second, the hot asphalt was spread at the rate of 0.25-gallon per square yard, by the use of a small hand asphalt spreader; and, third, sand at the rate of about 20 pounds per square yard was spread by hand and then the surface was rolled with a 10-ton three-wheel roller. The final rolling was effected by traffic itself when the street was thrown open for use. Also, the warmer the weather, the better the penetration of asphalt into the old pavement and the absorption of sand. Sand was used because it could be provided at low cost from the city-owned pit. The asphalt was heated in a city-owned kettle holding about one ton of asphalt. The equipment was rather primitive, but it was all that was available, and it made possible the use of a larger per cent of hand labor. With a force of ten to twelve men, an average of two blocks per 10-hour day was completed.

DOUBLE FLUSH-COAT ASPHALT SURFACING ON A BUSINESS STREET, FORT DODGE
The second coat of the hot application is being applied to one-half the width of the street, leaving the other half open for traffic

Cost

The total cost, including asphalt, labor, removal of excess sand, blotting with fine limestone when bleeding occurred on hot days, and the sand, was approximately 10 cents per square yard. The more bleeding that occurred, the thicker the new surface became. It was found most economical to remove the excess sand by flushing it to the gutters with the city's street flusher and then removing it by hand.

Results Accomplished

On the 7½ miles resurfaced in 1937 and 1938 not a single patch has been necessary, resulting in an estimated saving in patching alone in 1939 over 1937 of about $4,500. The waves and unevenness of the surface have been materially reduced. Public appreciation has been very marked. Moving pictures of this work as well as of other activities of the Street Department are proving educational to the taxpayers. The most unexpected and noticeable results have been the penetration of the asphalt to a depth of ½-inch to 1½ inches into the old deteriorated pavement, resulting in its rejuvenation and a future service for an estimated ten to twenty years. Also of real interest to the taxpaying public was the financing of this work from savings from previous patching expense, contributions from the State Highway Department, and other economies which saved assessments to benefited properties, illustrating, it is believed, the advantage of business and engineering administration of street departments.

Work Well Distributed

In all, 104½ blocks have been resurfaced, and of necessity they are scattered throughout the city, for the streets that were in the greatest need of repairs were resurfaced without considering their location. State Highways 5, 169 and 20 with their heavy traffic were included in the program, together with numerous bus routes and other scattered blocks which for one reason or another have unusually heavy traffic.

Of the 104½ blocks resurfaced, the State Highway Commission has paid for 33½ blocks, while the city has paid for the remaining 71. The State Highway Commission, instead of doing the work with its own forces, entered into a contract with the Fort Dodge Street Department allowing the city to do the work, with the result that wages for local labor were provided amounting to approximately $1,800. The Highway Commission found that the work done by the local Street Department was entirely satisfactory, and the Commission was willing, therefore, to let the city handle the work within its borders.

Savings Effected

The resurfacing program will mean a large saving to the city Street Department by eventually doing away entirely with the patching program. In 1936 a total of $5,325 was spent for patching the streets, and 425 tons of patching materials were used. The following year, 1937, the amount spent for patching was $4,875, and 475 tons of material were required. In 1938, the sum spent for patching dropped to $2,125, and the amount of material required to 250 tons. It is expected that only $700 with 75 tons of material will be required to take care of all patching in 1939.

Two years ago the city had 46 miles of paving, 24 miles of which was in need of patching. With 7½ miles of the damaged paving resurfaced, and with another 7½ miles resurfaced during 1939, the need for further patching for some time will be practically eliminated.

The Street Department is proud of its resurfacing program, for the new surface not only looks better and is a great improvement over the former surface but has conserved for a good many years the paving investments which the people of Fort Dodge have made, without forcing them to spend added sums for a considerable period. If the streets had not been resurfaced in 1938, an expenditure of more than $45,000 for the replacement of pavement would have been required.

Flood-Plain Zoning and Evacuation

Urged by National Fire Protection Association

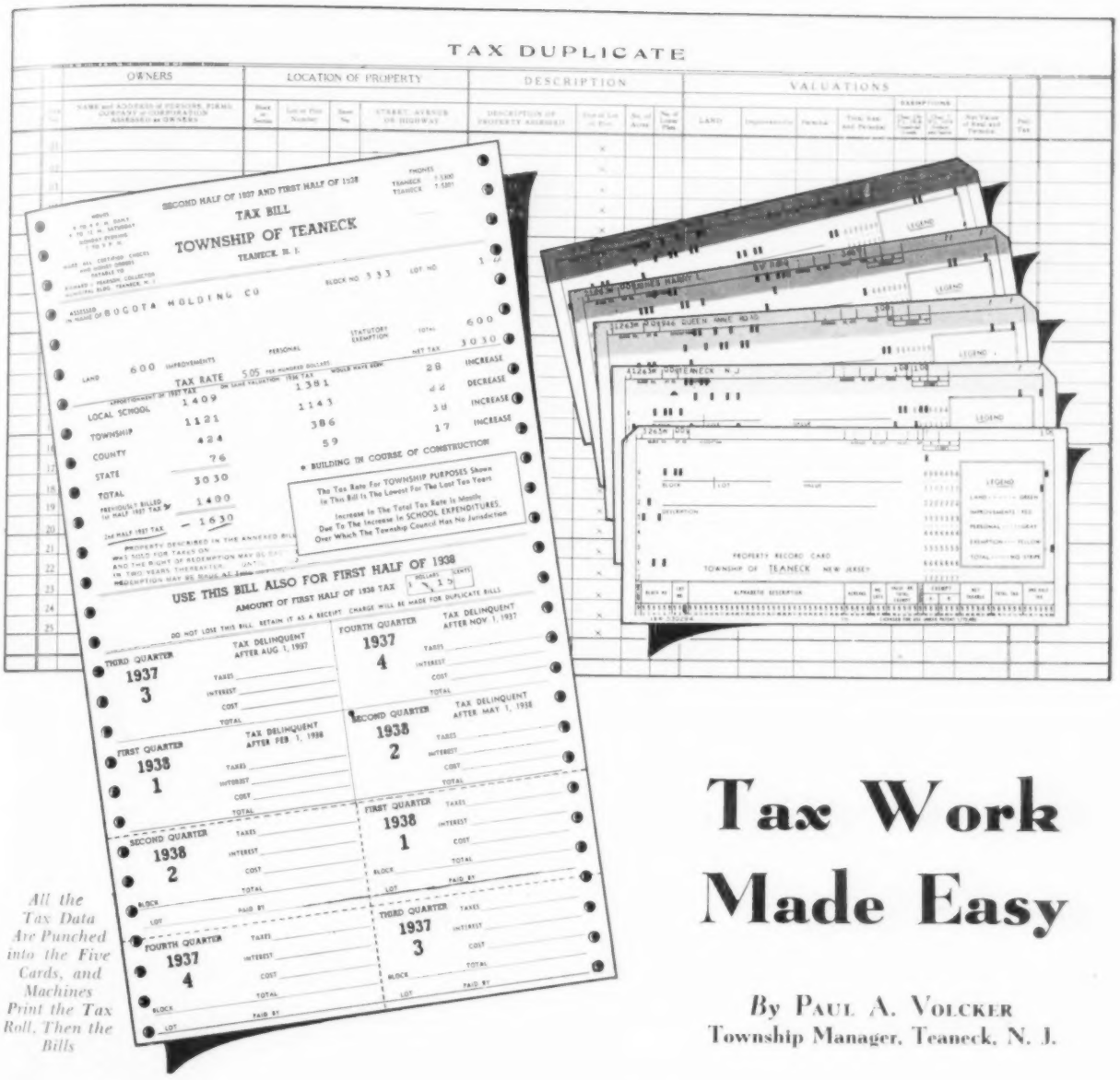
The beginning of a campaign of education by NFPA's Committee on City Planning and Zoning, to promote the general acceptance and utilization of flood-plain zoning and evacuation as sensible and effective methods of reducing flood losses, is marked by the resolution quoted below and by a 15-page article by the Committee's chairman, H. C. Klein, in the April, 1939, *Quarterly* of the National Fire Protection Association.

Reciting that experience has demonstrated that the flooding of land and structures in low-lying areas adjacent to rivers subject to periodic floods is accompanied by the peril of fire to property as well as the perils of personal injury, ill health and death, also that fire protection is handicapped and frequently rendered valueless by flood waters; and that losses resulting from the periodic flooding of such areas can be reduced by the comparatively simple and inexpensive method of keeping people and vulnerable property out of the paths of floods; the National Fire Protection Association at its 43d annual meeting, held in Chicago, May, 1939, resolved:

(1) That states without enabling laws be urged in the interest of public safety and general welfare to authorize municipalities and other political subdivisions to zone areas subject to periodic floods into districts in which future occupancy of structures is regulated or prohibited in accordance with the vulnerability of each use and of each district to flood damage; also to take into consideration whether land submitted by developers for subdivision for residential or other uses can be safely used for building purposes without peril from fire or flood;

(2) That municipalities and other political subdivisions in states in which such enabling laws are now in effect, be urged to utilize them by zoning, and by restricting the subdivision platting of flood-vulnerable lands as outlined in Paragraph (1); and

(3) That municipalities and other political subdivisions be urged to initiate the gradual evacuation of present uses of periodically flooded areas through removal of persons and flood-vulnerable properties to safe localities wherever the expense of such removal and re-settlement does not substantially exceed the cost of the positive protection of such areas against flood damage or the potential flood losses averaged over a reasonable period of years and capitalized, including consideration of potential losses to life and health.


TAX DUPLICATE
OWNERS
LOCATION OF PROPERTY
DESCRIPTION
VALUATIONS
SECOND HALF OF 1937 AND FIRST HALF OF 1938
TAX BILL
TOWNSHIP OF TEANECK
TEANECK, N. J.
BOGOTA HOLDING CO
BLOCK NO 333
LOT NO
LAND 600
IMPROVEMENTS
PERSONAL
STATUTORY EXEMPTION
TOTAL 600
NET TAX 3030
TAX RATE 5.05 PER HUNDRED DOLLARS
LOCAL SCHOOL 1409 1381 28 INCREASE
TOWNSHIP 1121 1143 22 DECREASE
COUNTY 424 386 38 INCREASE
STATE 76 59 17 INCREASE
TOTAL 3030
PREVIOUSLY BILLED 1ST HALF 1937 TAX 1400
2ND HALF 1937 TAX 1630
* BUILDING IN COURSE OF CONSTRUCTION
The Tax Rate For TOWNSHIP PURPOSES Shown In This Bill Is The Lowest For The Last Ten Years
Increase In The Total Tax Rate Is Mostly Due To The Increase In SCHOOL EXPENDITURES Over Which The Township Council Has No Jurisdiction
USE THIS BILL ALSO FOR FIRST HALF OF 1938
AMOUNT OF FIRST HALF OF 1938 TAX
DO NOT LOSE THIS BILL. RETAIN IT AS A RECEIPT. CHARGE WILL BE MADE FOR DUPLICATE BILLS
THIRD QUARTER 1937 3 TAX DELINQUENT AFTER AUG 1, 1937
FOURTH QUARTER 1937 4 TAX DELINQUENT AFTER NOV 1, 1937
FIRST QUARTER 1938 1 TAX DELINQUENT AFTER FEB 1, 1938
SECOND QUARTER 1938 2 TAX DELINQUENT AFTER MAY 1, 1938
TAXES
INTEREST
COST
TOTAL
BLOCK
LOT
PAID BY
PROPERTY RECORD CARD
TOWNSHIP OF TEANECK NEW JERSEY
LEGEND

All the Tax Data Are Punched into the Five Cards, and Machines Print the Tax Roll, Then the Bills

Tax Work Made Easy

By Paul A. Volcker
Township Manager, Teaneck, N. J.

Until the bills of 1937 went out, the tax work of the township of Teaneck, N. J., population 22,000, was performed by the time-honored manual method, with the usual peaks, when there was room for little else besides the tax-roll preparation and the billing. Then a new system was installed, the like of which had never been seen in Teaneck and vicinity. In fact, ours is said to be the pioneer use of the tabulating-machines method applied to both the tax roll and the bills.

In the assessor's office, which is responsible for the preparation of roll and bills and their delivery to the tax collector, 6½ man-months of work is now performed in 36 hours. Says Assessor Edward M. Young: "The new system abolishes practically all clerical work, eliminates office detail and peak loads, and gives us more time for constructive work."

In the tax collector's office, which mails out the bills, it is no longer necessary to employ three or four extra persons for three or four weeks each year. The volume of work incidental to making and mailing tax bills has been reduced to mailing only, resulting in up-to-date collector's records.

Our original assessment records, taken from tax assessment maps, are written on cards which never leave the office, where they are filed by blocks and lot number. From these property-record cards we have punched, by an Alphabetic printing punch, a set of four cards each doubly identified at the top by a stream of color and a typed description. The four cards contain the following information punched into them:

Card 1. Location and description of property, block and lot, size, number of acres or lots, and the assessed valuation;

Card 2. Block and lot, name of owner, value of improvements, code showing whether or not the building is under construction.

Card 3. Block and lot, address of owner, and personal total.

Card 4. Block and statutory exemptions.

The tabulation of these cards, which can be punched at the rate of 1,000 per day, produces the tax roll and later the bills.

Shortly after October 1, the steel file trays containing the cards are sent by the assessor's station truck to the Newark branch office of the International Business Machines Corporation, where the complete tax roll, consisting of two carbon lists and the "duplicate," are run off in 18 hours of work. The machine extends and crossfoots and totals each page. The cards and tax duplicate sheets are returned to this office within four days. The tax sheets are in fanfold form with one-time carbons. The carbons are removed, the sheets separated and placed in sequence, the pages numbered, the re-caps prepared, and bound into these complete sets of three volumes, two of 200 blocks each for county and one of seven volumes of 100 blocks each for the convenient handling of the tax collector. In addition, there is a personalty tax duplicate covering tenants and stores.

About January 10 one of the tax lists is sent to the Bergen County Board of Taxation for checking, certification, and setting of local tax rate.

Better Billing

For billing purposes in the early summer, the cards, accompanied by a fifth "total" card, are again sent to Newark. The fifth card carries the former (say the first-half billing) which is deducted by the machine to give the amount of the present (second-half) tax. In addition, the machine halves the current year's tax for the first half of next year's tax (the total next-year's tax being made correct in the second half's billing). This total or fifth card is then discarded, being replaced by a new fifth card for next year's billing.

Comparative Data on Bill

Four additional cards for each of the 16,000 parcels are made in Newark by an automatic multiplying punch which punches in each the value times the tax rate, for schools, township, county and state. The bills itemize these four taxes for both 1938 and 1937 and show the amount of change in each case and whether there has been an increase or a decrease in the tax. This involves 140,000 computations, all performed and printed by the machines. It is valuable information for the taxpayer which we never before had facilities to provide.

The bills are returned to the collector's office, where they are torn apart, and notations (such as "Tax sale") are put on those needing them. They are then mailed in window envelopes.

Much of the routine described takes place in the International Business Machines branch office and is invisible to us. The assessor merely keeps his records, including the tabulating cards, up to date. The system not only saves assessor and collector a tremendous amount of time, but is accurate and neater, and less expensive than formerly.

Facing "The Nation's No. 1 Economic Problem"

A CONSTRUCTIVE answer to the much-publicized recent report of the National Emergency Council on the civic and economic problems of the South is offered in the inauguration of *Holland's* Southern Institute for Town Service. Instead of resenting or ignoring the findings of this report, the new Institute—organized by *Holland's*, The Magazine of the South, published in Dallas, Texas—is facing the problem with vigor and intelligence. In a challenging announcement headed "Let's Do Something," R. C. Morrison, Director of the Institute, says in part as follows:

"We believe that one effective approach to the many national and regional problems is through the town. This is why *Holland's* Southern Institute for Town Service has been established for and dedicated to better town building; and this is why outstanding leaders in varied fields have been invited, and have consented, to serve as members of its Advisory Council. . . .

"The town is the foundation for the superstructure. If this foundation is weak, if it does not provide economic security and an equitable share of the benefits of modern civilization, there is bound to be a crash. On the other hand, if the people living in even the most remote towns have the advantages of hospitals, libraries, recreation facilities, economic opportunities, and many other desirable and needed services, then America need not fear for the security of democracy. . . .

"We should like to see organized everywhere Town Forums, which would take advantage of the great store of human resources from all groups—business men, chambers of commerce, teachers, students, ministers, newspaper editors, social workers, garden-club members, artists, engineers, doctors, and all the others—banded together in a definite, permanent force. It takes this *working together intensely and unselfishly* to build a town and make it a wholesome place in which to live.

"We suggest that the people everywhere think of their town as their club, and the taxes they pay as their dues. When everybody feels himself a vital part of his town and realizes that by *working together more can be accomplished than by working alone or in antagonistic groups*—then will town life prove thrilling."

Amendments to Housing Acts

ONE of the new amendments to the National Housing Act, signed by the President on June 3, retains the provision of the 1938 amendments which limited the amount of an insurable mortgage to $5,000,000, the cost per room under it to $1,350, and the mortgage principal to 80 per cent of the estimated value of the completed project. To this last limitation, however, there now has been added:

"*Provided*, that such mortgage shall not in any event exceed the amount which the Administrator estimates will be the cost of the completed physical improvements on the property or project, exclusive of the following: public utilities and streets; taxes, interest, and insurance during construction; organization and legal expenses; and miscellaneous charges during or incidental to construction."

The National Housing Act, which covers the activities of the Federal Housing Administration in insuring loans for privately financed projects, should not be confused with the United States Housing Act, under which the United States Housing Authority functions. As this issue of THE AMERICAN CITY goes to press, final action has not been taken by Congress on Senate Bill S. 591, doubling current authorization for the nation's public low-rent housing and slum-clearance program. This bill, which would provide $800,000,000 additional in USHA loan funds and $45,000,000 in annual contributions, passed the Senate by the overwhelming vote of 48 to 16. Favorable action in the House is, therefore, expected.

Long - Lasting Signs

At top, left—"A ten-year-old porcelain-enamel Cleveland street sign before and after the regular washing."—Ben F. Field, Executive Assistant to Mayor Harold H. Burton, Cleveland, Ohio.

At top, right—"Last year we began a street-marking program with a permanent and serviceable sign which will not require annual repainting of the street names, but only one yearly coat of paint to the cast-iron framework."—Oscar L. King, City Engineer, Kingsport, Tenn.

Left—Senor Andres Galto, of Mexico, is receiving road directions from W. A. Petty, Chief Inspector of the United States Customs Bureau at the Laredo, Texas, bridge to and from Mexico. All signs show that he is headed right.

Bottom, left—"Large directional sign on the California-Mexico border at Baja; one of more than 400,000 signs erected by the Automobile Club of Southern California. We find that porcelain-enamel signs do not fade or discolor and are long-lasting if not maliciously damaged. We have in place signs that were erected 27 years ago and are in perfect condition."—D. C. Rhodes, engineer of the Club's sign-posting department.

Below—Reflectorized speed-limit sign installed on all through boulevards in Los Angeles. Their commanding appearance, and their visibility, symbolize authority and facilitate traffic control. Officer P. A. Haywood, Jr., is calling attention to one of the new porcelain signs.

The Use of Property Ledgers

(Continued from page 46)

will show when it is more economical to install a new unit of equipment than to pay large maintenance and repair costs on an old unit.

Having reliable cost data, municipalities can compare costs with one another, enabling them to find and correct costs that are unnecessarily high.

Description and Arrangement of Property Ledger Forms

The arrangement and form of the property ledger sheet should be designed so as to combine accuracy, brevity, and compactness with the necessary amount of detail.

The loose-leaf book or card system is usually most desirable for the property ledger file, since only those pages that are necessary for current work need be carried in it, and additions can be made whenever they are required.

The term unit of property is considered to be a basic item of property, or two or more items constituting equipment which operates as a unit. Hence, units of property may be classified as follows:

(1) Simple property units (a unit which renders service as an entity such as a motor or pump)

(2) Composite property units (units composed of a main unit and one or more sub-items which require separate retirement and renewal during the service life of the main unit, such as certain engines, power shovels, etc.)

(3) Continuous property units (a unit composed of separate sub-units, whose retirement and renewal from time to time enable the whole unit to remain in service indefinitely, such as a railroad track, a street-lighting circuit, or a building)

Age groups of like property items such as meters, transformers, etc., should be considered as a unit of property, to reduce the calculation work and the number of property ledgers.

The data on the ledger form should include:

(1) The description of the unit and general information incidental thereto

(2) Dates of various entries

(3) Original cost new of the unit and cost of additions or replacements

(4) Service age and probable life

(5) Condition per cent and present values

(6) Annual depreciation and the depreciation reserve

(7) Repairs and maintenance

(8) Other information such as fuel cost, output, and time used, which may be desirable concerning a specific property unit

Examples of Property Ledger Forms

Property ledger forms Numbers 1, 2, 3 and 4 illustrate the general arrangement and use of property ledger accountancy. These illustrations are typical examples.* It is often necessary to design a special form arrangement to provide additional information concerning specific property units. The number of different forms should be kept at a minimum.

Forms 1 and 2 apply primarily to simple property units but may be used for composite or continuous units by using more than one sheet.

The straight-line method for computing depreciation was used in the illustrations; however, the sinking-fund, present-worth, or any of the other methods could be used equally well. To compute the rate of depreciation of a unit of property, it is first necessary to estimate the probable life of the unit, making use of past experiences and available mortality data. Because the life of individual units may vary from the average, inspections of the property units should be made at intervals to determine whether or not the actual life will differ from the originally estimated life of the unit. When it becomes apparent that the rate of physical depreciation differs from that originally estimated, adjustments may be made as are shown on form number 1 at the beginning of the sixth, twelfth, and fourteenth years of operation. In a similar manner, changes in the rate of depreciation, due to obsolescence or inadequacy of a unit, may be accounted for in the property ledger. The adjustment of the condition per cent of the unit will depend on the accounting method used for computing depreciation.

Form No. 2 is a modification of Form No. 1 providing for the use of one side of the sheet for depreciation and the reverse side for repairs. The time used, or work record as is shown on Form No. 2, is very useful for items of equipment which are not used regularly. The idle time of equipment is indicated by the work record, and in the case of trucks and various other equipment it may show that a rearrangement of schedules will permit a department to function with less equipment.

The property ledger may be designed to include an output record together with an input or fuel cost record for property units such as a diesel engine and generator, electric water pump unit, etc.

Form No. 3 is designed specifically for composite property units composed of different items which have different probable lives. The illustrative example shows a steam road roller, the main unit of which has a probable life of fourteen years and the scarifier with a probable life of seven years. It is seen that the scarifier was replaced on January 1, 1926, before the main unit of the steam road roller was worn out. A salvage value of $20 was realized and the new item cost $550. Thus $480 was deducted from the depreciation reserve, and the present value was increased $550 less $20 salvage, or $530, showing a new investment of $50 to be charged to the unit.

Form No. 4 is designed to facilitate the keeping of cost accounts for age-groups of like property units occurring in numbers, which may be grouped and considered as one unit. This form is applicable to property items such as meters, poles, transformers, water mains, hydrants and other property of which there is more than one item of the same age.

In order that the time, work, and expense may be reduced, it is desirable as far as possible to use age-groups of like units in property ledger accountancy. All like

* Other examples of property ledger forms may be found in Church: "Manufacturing Costs and Accounts," Second Edition, McGraw Hill Book Co., Inc., New York, 1929; Marsten and Agg: "Engineering Valuation," First Edition, McGraw Hill Book Co., Inc., 1936; and Manual of Water Works Accounting, American Water Works Association, New York, 1938.

units installed within a given year may be grouped, using Form No. 4, and depreciated as a group. When a number of items of a group are installed at different times during the year, or when there is uncertainty regarding whether the installations for the year in any particular group are completed, the items should be recorded on an auxiliary sheet, and the total installations entered in the property ledger at the end of the year. The use of Form No. 4 requires the selection of a mortality curve for each group as an aid in estimating the probable life of the average survivor of the age-group at different ages and to determine the correct condition per cent. If mortality data are not available for a particular type of unit, an approximate mortality type curve may be assumed. The property ledger, at the retirement of the units, will provide mortality data which will be useful for determining the mortality curve for that type of equipment in the future.

Where property ledgers are installed in an old plant, the date of the installation of the property ledger, as well as the date of installation of the unit, should appear on the ledger form. It is necessary to estimate the condition per cent, age and probable life of old units when no record concerning them is available.

Practical Application of Property Ledgers

To illustrate the working of property ledgers in a plant, let us use a municipal power plant as an example. There is in the accounting system of the city a general account for the power plant.

If property ledger accounts are used, each property item, or age-group of similar property items will be represented on a separate ledger sheet. These sheets are separate from the general account. They will contain the detailed information concerning the items of property, and only the total figures for the entire plant will appear in the plant account.

For example, the property ledger for a diesel engine would show the cost delivered and the cost of installation, and the plant account will contain these costs as part of the summation or lump-sum cost of the entire plant. Likewise, any expenditure for repairs on the engine will be entered in detail in the property ledger, but will be entered in the plant account only as part of the total plant repair cost. The annual depreciation, the depreciation reserve, and the present value of the engine will be entered in detail in the property ledger for the item, but will appear in the plant account as a part of the total annual depreciation, total depreciation reserve or total present value for the entire plant.

Thus it may be seen that the property ledger accounts are controlled by the plant account. In addition to just agreeing with the controlling account, as is the case with most subordinate ledgers, the property ledger entries for depreciation should be in a threefold agreement with the plant account. That is, the sum of the depreciation reserves for each unit as shown in the property ledgers must agree with the depreciation reserve of the plant account; the annual depreciation computed on the property ledgers must equal the total annual depreciation for the whole plant, and the total present values of the units of property must agree with the present value of the plant as shown in the plant account. Whenever any accounts are charged in the property ledger, the controlling plant account must be charged with an equal amount. The charges are divided in the respective property ledgers, while only the total is charged in the plant account.

The repair and maintenance record, together with a record of depreciation, input and output, facilitates an analysis of operation costs of different equipment and permits an accurate determination of specific operation costs, such as the cost of electricity delivered to the switchboard and the cost of distribution of the electricity.

When using the property ledger for units such as street maintenance equipment, trucks, and sewer equipment, it is usually easier to use an auxiliary sheet on which to keep the repair costs, fuel costs and the time-used record for each month, and then at the end of each month post these onto the property ledger forms.

To adequately keep property ledgers for specific equipment, one must be familiar with that equipment. Property ledgers offer an opportunity for engineers and accountants to join in a common effort.

The property ledger system, after it has been developed, need not require a great deal of extra work and will save considerable time and money by keeping an accurate record of all equipment and costs.

Louisville Street Paving

(Continued from page 43)

because of its high and uniformly controlled bitumen content.

Results

At the time of this writing we have made considerable progress on our new project, and we feel that our methods and policies are proving very satisfactory, in that the city is getting a splendid piece of work.

It has been our experience that wherever reconstruction work has been done, the property owners have taken a new interest in their property and have painted and remodeled in many instances. Particularly in the business district, new life has been injected into the street and new values restored. Our present program embodies the resurfacing of most of the main arteries leading to the business district. Our next work will be to reconstruct streets leading into these main arteries.

The administration of this work was carried out by the Department of Works of the city of Louisville, R. W. Burks, Director, and actual construction work handled by the author as Construction Engineer, with the cooperation of the WPA officials of the state of Kentucky and the city of Louisville.

Forward Steps

Reported by Municipal Officials, Chamber of Commerce Executives, and Others

"Council of Presidents" to Coordinate Civic Organizations

AMES, IOWA.—The recent formation of a Council of Presidents of 30 civic organizations inaugurates an experiment in community coordination and planning for the city of Ames. Committees have been authorized to study the community chest idea with a view to considering the establishment of a community welfare board, to make plans for the observance of the 75th anniversary of Ames next fall, and to plan a civic forum program. Other projects to be taken up include a program formally to induct youth into citizenship upon reaching the age of 21, a plan for sponsoring local performance of plays and operas for young people, and the raising of "a mile of pennies" (about $800) for underprivileged youth.

Organizations represented on the Council include the Rotary, Kiwanis and Lions Clubs; the American Legion, the Veterans of Foreign Wars; women's clubs, Boy Scouts and Camp Fire Girls; the Red Cross; Parent-Teacher Council; the Board of Education; League of Women Voters; Junior Chamber of Commerce and Merchants Association; Hospital, Park, Library and Zone Adjustment Boards; Playground and City Planning Commissions; and the Civic Forum.

The objectives of the proposed Council are: to extend the knowledge and understanding of municipal affairs and problems; to encourage frank and free exchange of ideas; to aid, whenever possible, in planning improvement and activities; to become an agency of public relations; and to mold public opinion for the improvement of Ames.

At the meeting on June 7 this organization conducted a forum discussion on "The City Budget and Taxation.

FRANK D. PAINE,
Mayor.

Flooding Caused by Dam Brings Improved Planning to City

GUNTERSVILLE, ALA.—The need for planning the future physical development of Guntersville was brought to the attention of this community of approximately 3,500 inhabitants by the radical changes which took place here due to the building of the Guntersville Dam by the Tennessee Valley Authority.

The city was built along the foothills adjacent to the alluvial valley lands. The coming-up of waters occasioned by the dam has left it on a peninsula with 9-foot water along the levee on a mile front adjacent to the city. It has given us the appearance of a seaport with a beautiful harbor one-half to three-quarters of a mile wide, opening into a large lake sprawling out in many directions into the main river channel and coves between the tree-clad hills and mountains on every side of the lake. The city is easily accessible by a system of new roads, bridges and beautiful causeways, but the flooding of portions of the city and the influx of people from surrounding area created a

Top—Guntersville, on a Peninsular Harbor. Middle—The Guntersville Water Works. Bottom—Small-Boat Harbor, Two Blocks from the Business District

relocation problem. And it has become obvious that the basis for town growth has changed.

A City Planning Commission has been established with the cooperation and advice of the TVA and the Alabama State Planning Commission. Our program is, first, to establish those essential controls which will preserve existing values and allow us to direct whatever future growth occurs, so that it will be of a more orderly nature. A zoning ordinance has been prepared and is before the City Council for enactment. Subdivision regulations and a major street plan are being prepared. We expect as soon as they are in force to direct our efforts toward improving our building code. The present building code is made up of an ordinance regarding fire districts, one on sanitary regulations and one on electrical wiring. It is planned to bring all these items under the one heading of a building code. Some public works projects are also being considered. We hope to direct our efforts to the preparation of a master plan which will bring the several projects into an integrated whole.

Our arrangement for a technical staff may be of considerable interest to your readers, since it is an experiment in cooperation between a municipal agency, a state agency and a federal agency. We have a technically trained, resident city planner, who is in immediate charge of carrying out the program. He reports to the State Planning Commission and to the TVA so that the benefit of their consultant service will be effective in guiding all the work. Judging from the success that we are having here, it would seem that for small communities this method which puts the younger city planner in direct charge of the work, with consultant service at hand, might be the best way for enlarging the scope of city planning.

Besides the work of the Planning Commission, the Garden Club is beautifying the parks, roadsides and vacant lots, to the end that we may make our city more beautiful and especially inviting to people who live inland and cannot go to the coast for the enchantment and thrills that large bodies of water in such a setting can give them. We are hoping, too, to develop facilities for motor-boat racing, swimming, rowing, fishing, and waterfront camp sites.

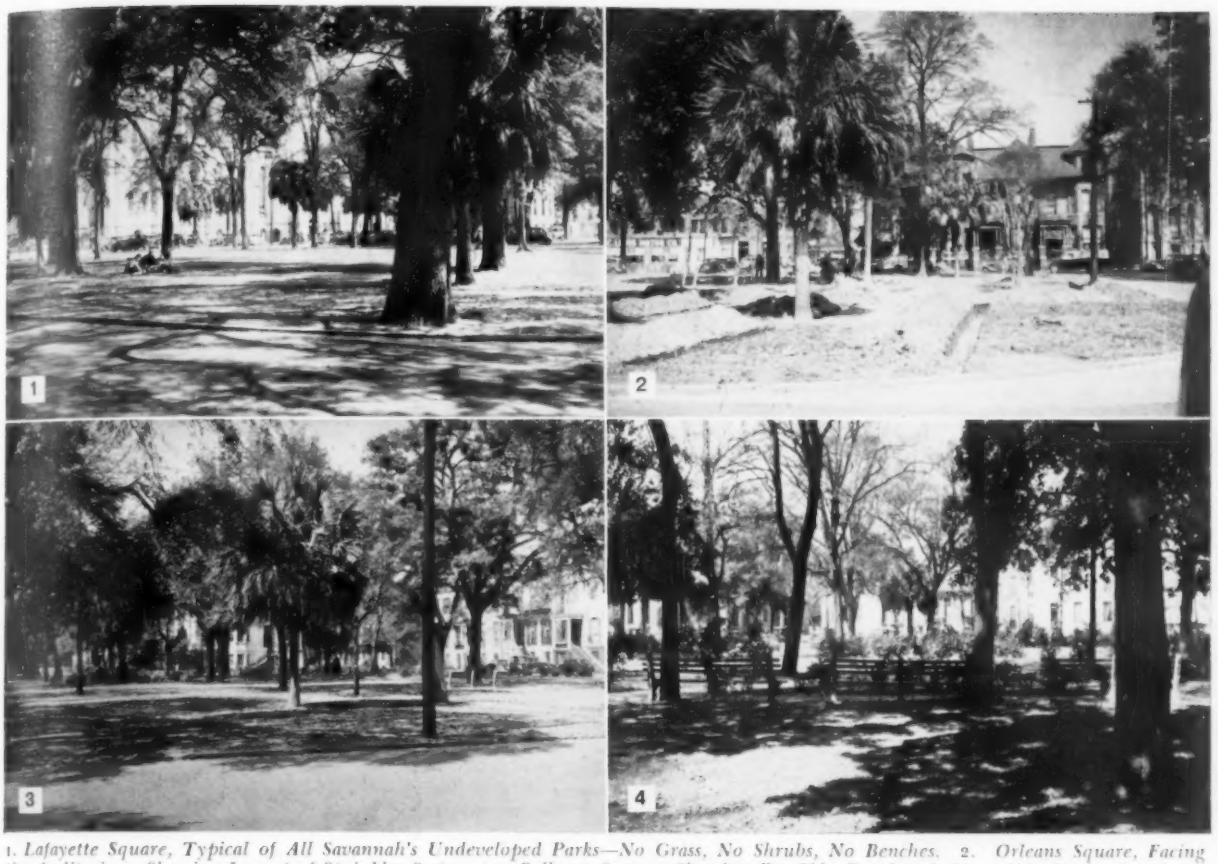
T. HARVEY WRIGHT,
Chairman of Planning Board.

Savannah Improves Her Many Parks and Squares

SAVANNAH, GA.—Up to six years ago extensive improvement of parks and squares in Savannah was hampered by lack of funds. But in 1933 the administration of Mayor Thomas Gamble increased its appropriations to the Park and Tree Commission, and formulated a definite and progressive policy with regard to Savannah's unimproved parks and squares, of which there were approximately thirty.

The task of creating permanent spots of beauty out of these ragged eyesores was turned over to William H. Robertson, Superintendent of the Park and Tree Commission. Since watering of grass and shrubbery was of prime importance, and as the cost of hand watering would be prohibitive, the first matter to be given serious attention was an elaborate sprinkler system.

Almost without exception, the mains are 4-inch pipe running entirely through the center of the square. From the mains, at intervals which vary as conditions demand, 2-inch headers are tapped. The headers in turn give way to feeders which,



1. *Lafayette Square, Typical of All Savannah's Undeveloped Parks—No Grass, No Shrubs, No Benches.* 2. *Orleans Square, Facing the Auditorium, Showing Layout of Sprinkler System.* 3. *Calhoun Square, Showing Far Side Developed; Near Side Undeveloped, for Use as Playground.* 4. *Oglethorpe Square, Showing Complete Development, with Shrubs, in Well-Balanced Assortment, So That There Will Be Flowers over a Period of Several Months*

beginning with 1¼-inch pipe, reduce gradually to ½-inch at the end of the line. This system was adopted so that uniform flow from all heads could be obtained, regardless of the distance of the head from the main.

In grassy areas the heads are flush, but in the shrubbery their height varies from 12-inch to 36-inch, thus giving shrubbery a thorough foliage bath and at the same time watering the soil. Wherever practicable, heads are spaced 14 feet 6 inches center to center. The Thompson head is used exclusively.

After the pipe is laid, the ground is graded for better drainage, and beds for shrubs and evergreens are carefully prepared. Azaleas, of which more than seventy kinds are used, are so assorted that, when early varieties have ceased to flower, later blooming types take their place. Other flowering shrubs are also extensively used, and include Japanese quince, Camellia japonicas, pineapple guavas, golden bells, star magnolias, several kinds of Chinese magnolias, fragrant tea olives, Spirea, and purple plum. Non-flowering shrubs and evergreens include monkey puzzle, Cryptomeria, Cedrus Lebani, Libocedrus, red cedar, and Chinese juniper. Practically all shrubs and evergreens are transplanted from nurseries maintained by the Park and Tree Commission.

Both Chinese centipede and carpet grass are used; however, the parks and squares are sown to domestic rye in winter, and thus remain green the year round.

To date fifteen hitherto unimproved parks and squares have been landscaped. Mr. Robertson estimates that costs, which include labor, piping, grass and shrubs (from municipal nurseries but here considered at their average market value), benches, and so forth, will vary from $800 to $1,000 for the smaller parks, to $4,000 for the larger or more elaborately planned ones, the latter being approximately 1½ acres in extent.

Interesting facts in connection with this project are that a lane about 10 feet wide running north and south through the center of most of the squares is left open for fire and police vehicles; and that, where parks or squares are adjacent to schools, usually only the half farthest from the school is improved, the near half being left unimproved for use as a playground.

Savannah considers her landscaped parks and squares among her most valuable assets, and eagerly awaits the day when all of them will have been made spots of beauty in a beautiful city.

ROBERT SPRAGUE PARRISH.

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A Big-Time Community Center for a Small Pennsylvania Borough

SELINSGROVE, PA.—A small group of residents of Selinsgrove joined in an effort to start a community playground a little more than two years ago. Today this recreational organization has grown until it directs from the community house a diverse program supported and participated in by most of the 3,000 residents.

Functioning under the Department of Instruction, assisted by the County Supervisor of the Recreation and Adult Education Division of the WPA, the group secured the playground and operated it during the summer of 1936, and planned to continue the program indoors and to interest every member of the community. A vacant building owned by the local bank was leased by the Borough Council, and invitations were sent to every local club and civic organization to select a representative to serve on the governing board of the center. Three members of the Borough Council were appointed to serve on the board, also a young member of each senior and junior class in the secondary schools. A $2,000 community chest was set up for the center, and over subscribed by $63.

The organization of a schedule of activity took into consideration not only

games and occupations for the very young, but special-interest groups for the older people, into which younger members were gradually drawn by being offered expert instruction in such subjects as drama, arts and crafts, stamp collection and amateur radio. The Susquehanna Amateur Radio Club, composed of members within a radius of 25 miles of Selinsgrove, includes many of the community's most prominent citizens. Practically all its members are now licensed amateur operators, a number of them trained and aided by leaders of the club. Two members of this club serve on the Susquehanna Emergency Network, an organization formed under Federal auspices to provide communication during emergencies when all forms of regular communication are down.

The annual community Hallowe'en parade was revived by the Community Center with great success. The chairman of the celebration committee was a senior in High School. Associated with him were several fellow students and business men and women. Local merchants contributed prizes, and hundreds of children and adults took part in the parade and later were entertained with refreshments by the board of directors of the center on the lawn of the community building. The committee to select the winners of the prizes included the District Attorney, a minister, the wife of an attorney, and a business man. Hallowe'en pranks were reduced to a minimum in this evening of fun.

Other features of the community program have included the public library, started a little over a year ago, now having over 2,000 volumes, and steadily growing; a nearby beach on the Susquehanna River, with a swimming instructor and lifeguards; improved playgrounds for older boys and girls, and a new playground for the very young; a summer camp, with its own operating committee of camp boys; a Community Health Service, with weekly clinics, with the cooperation of the State Department of Health, and with state physicians.

Plans are under way for the purchase of the building occupied as the community center. It is spacious, and has been considerably repaired throughout by volunteers. Various groups are intelligently handling this matter of interesting every resident of the community in realizing the benefits that will be derived from the purchase of the building. Further improvements are being made in its renovation.

The remarkable success of the Selinsgrove Community Center has testified to the worth of such an organized program and the method by which it was achieved —the support and cooperation of every resident.

F. R. WENTZEL,
Chief Burgess.

A Flood Threat Eliminated

JOHNSON, VT.—The new village bridge at Johnson is but one among the many similar structures being built on the highway systems throughout this country. Although small and unimposing, and professing to be nothing more than a routine problem, it nevertheless illustrates the simple fundamentals of functional design.

The old bridge at this site was of the covered wooden type with two short spans separated by a bulky stone pier. While it was undoubtedly a contribution to the picturesque atmosphere of the surrounding countryside, certain more prosaic factors served to cancel its scenic value so far as the local community was concerned. The purpose of a highway bridge, after all, is not only to carry the roadway across the stream, but also to pass the stream under the road. Thus, the consideration of what volume of water can be accommodated beneath a bridge before washing it out is just as important as how much traffic can be carried. In the present instance, besides the inadequacy of the old wooden bridge for modern motor travel on a main-line highway, the stone pier occupied so large a portion of the rather restricted waterway that it served as a dam in periods of flood.

The new structure, which was built by the State Highway Department in 1938, is a two-span steel beam bridge with reinforced concrete deck. The roadway grade was not raised, but the substitution of a standard concrete diaphragm pier for the former masonry obstruction nearly doubled the available waterway. The span lengths are 74 and 79 feet, as opposed to the previous 40 and 55 feet, which shows the enlarged capacity. Based on actual high-water elevations, which are on record from the floods of 1927 and 1936, the new bridge can accommodate in a normal manner the most extreme known condition in which the river was 5 feet above the floor of the old bridge. From the traffic's viewpoint, the former restrictions of low clearance and one-way passage have been eliminated by the present 20-foot roadway and 5-foot sidewalk.

A. W. COLEMAN,
Vermont State Department of Highways.

Enthusiasm for Open-Air Theatre

CLEVELAND HEIGHTS, OHIO.—The popularity which can attend the intelligent construction and operation of a municipally owned and operated outdoor theatre is indicated by the large amount of space which the local press has devoted to our new outdoor Cain Park Theatre, opened in Cleveland Heights last August. Programs of music, drama, and lectures have already been shaped up for the nine weeks of the 1939 season, beginning June 18 and running through August 20.

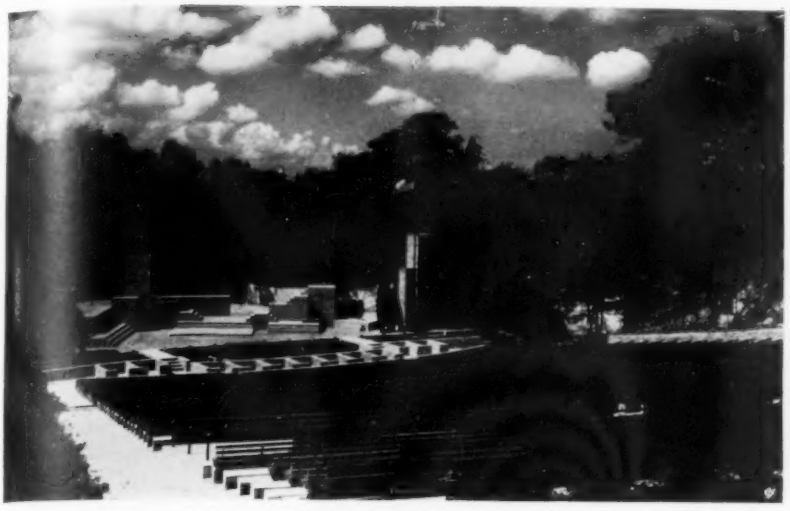
The theatre is on a two-acre site in a landscaped dell surrounded by trees and shrubbery. The stage is 82 feet wide by 80 feet deep and is flanked by light towers, two on each side, with an overall height of 35 feet. These also house the sound amplification system. A curtain of brilliant light will shut off the view while scenes are being changed.

Facing the stage are benches for 3,200 persons, set on curving rows of concrete each five inches higher than the one in front. Four brick buildings serve as dressing rooms for men and women, office headquarters, and scenery storage space.

At the outset, I invited the cooperation of the Cleveland Heights public schools so that the theatre might not merely become a recreation center but might serve

The Old Wooden Bridge at Johnson, Vt.

Johnson's Present Steel-Beam Concrete Bridge



Cain Park Theatre, Cleveland Heights, Ohio

the educational, cultural and spiritual advancement of the community as well. Churches and their ministers have assisted materially in carrying out these aims, particularly with respect to the Sunday evening community hours, which are free on the theatre's schedule of some 30 programs.

This year a special citizens' committee has been organized to work in conjunction with the Parks Committee of the City Council, under whose supervision the theatre is operated. This citizens' committee has assumed a marked responsibility for the sale of season subscriptions, for speeches before civic organizations, and similar promotion work.

The 1939 schedule calls for ten Sunday evening community hours, three band concerts, several dance programs, a musical comedy and at least nine plays with a total of 30 performances. The staff, considerably augmented this year, will direct three plays; a guest director three plays; two outside organizations have agreed to stage their own productions; and the community playing groups of the area around Greater Cleveland have accepted with enthusiasm the opportunity to contribute to the one-act play festival week.

A School of the Theatre is being offered this year in connection with the entertainment program, using summer morning hours for instruction by the staff in diction, body technique, make-up, technique of acting and stage craft. Tuition will be free, but the students, who must be over fifteen years of age, will be expected to spend their afternoons, and evenings when required, in crew work for the productions.

Gate prices will range from 25 to 75 cents, depending on the particular attraction. Season subscription books will provide admission at reduced rates: a $2.50 book containing sixteen general admission tickets good for any attraction in the season, and a $1.50 book, containing eight general admission tickets.

The theatre staff is headed by Dr. Dina Rees Evans, with William R. Winters as manager. Dr. Charles D. Dawe, Director and founder of the internationally known Orpheus Male Chorus of Cleveland, is musical director.

FRANK C. CAIN,
Mayor.

San Diego's Fire Station No. 4, and Effective Fire Equipment

SAN DIEGO, CALIF.—One of the most complete and modernly equipped two-company fire stations in southern California was recently completed by the Works Progress Administration in the city of San Diego. The building cost approximately $28,000 and was opened for service in the spring of 1938.

The new building, of semi-Mission design harmonizing with many of San Diego's other public buildings, is two stories high, 85 x 50 feet in plan, and has a 70-foot tower. Construction is of reinforced concrete throughout, with side walls of exceptional thickness.

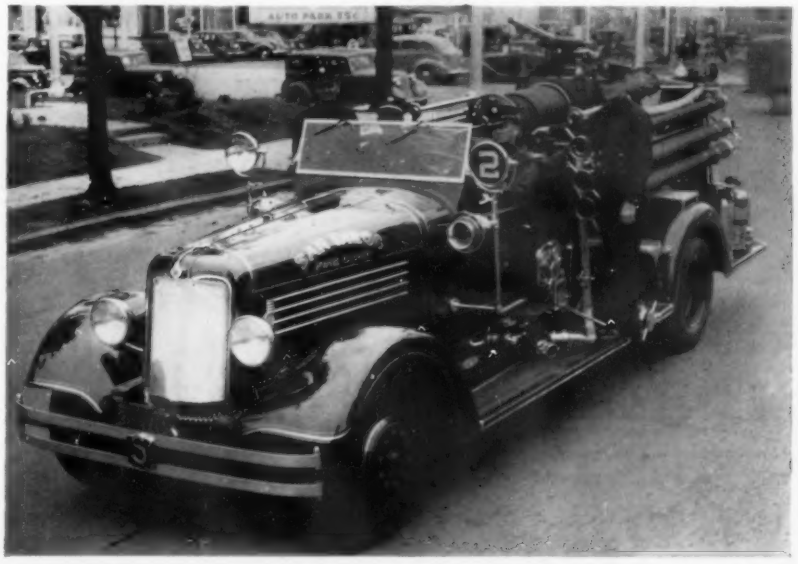
Except for a sizable storage room in the rear of the building, the new station's ground floor is used only for housing apparatus of an engine company and a hook-and-ladder company. The second floor provides spacious dormitory accommodations and ample locker space for eight men. The dormitory proper is equipped with single metal beds and ceiling lights.

Our Fire Department has in service nineteen pumping engines, one aerial and one city-service truck, a fire-boat, and three maintenance trucks; and in reserve, four pumpers, an aerial, and a maintenance truck. Eight of the pumpers (four in service and four in reserve) are more than fifteen years old, as are the city-service and reserve aerial trucks. The city has a replacement plan effectively administered.

Our fire-alarm is a Gamewell manual closed-circuit system having 20 box circuits, 6 primary and 6 secondary circuits, and 333 boxes. Alarms were received as follows in 1938: by box, 132; by telephone, 1,852; verbally, 206; and one by sprinkler, for a total of 2,191.

J. E. PARRISH,
Chief, Fire Department.

New Two-Company Fire Station Housing Modern Apparatus, San Diego



One of the Three Seagrave 1,250-Gallon Pumpers Bought Last Year by the San Diego Fire Department

One of these 3
WILL SUIT YOUR NEEDS

NOTHING builds and maintains streets and alleys, parkways, air ports and recreation grounds and nothing clears your streets of snow more effectively and economically than a motor grader. Adams has the size you need. . . . Many medium-size towns prefer Motor Grader No. 302 with 45½-hp. engine pictured above. Large cities with heavier work and WPA construction projects like Adams Motor Graders Nos. 50 and 51 with 66½ and 62½-gasoline and Diesel engines respectively. Small towns with light programs and small budgets "go for" Adams Motor Grader No. 20 with 22½-hp. engine and special rear drive which makes it capable of work that will astound you.

Whatever your grading or maintenance requirements might be, call in your local Adams representative now and ask him about these machines. If you do not know his name, mail the coupon below for this information.

Adams Heavy-Duty Motor Grader on a city WPA construction project. Available with 66½-hp. gasoline or 62½-hp. Diesel engine.

Adams Motor Grader No. 20 scarifying a gravel street. Any town can afford to buy this machine and its work will surprise you.

☆ADAMS
MOTOR GRADERS

J. D. ADAMS COMPANY, Indianapolis, Indiana

Gentlemen: Send me the name of your local representative and catalogs describing your ☐ Heavy-Duty, ☐ Medium-Size, ☐ Small Motor Graders.

Name .....

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AM 7-39

Net Bonded Debt of 268 Municipalities

THE accompanying table has been prepared from a much more elaborate compilation of the bonded debt of 268 municipalities of over 30,000 population, compiled by Rosina Mohaupt of the Detroit Bureau of Governmental Research from data furnished by members of the Governmental Research Association, city officials and chambers of commerce. The complete study, published in the *National Municipal Review* for June, 1939, contains fifteen columns, giving for each municipality: name of city, population; gross bonded debt, subdivided as general improvement, public schools, public utilities, and total; sinking-funds, similarly broken down; net bonded debt, total and excluding utilities, and per capita; and gross special assessments, total and per cent general city obligation.

In the list which follows, THE AMERICAN CITY has rearranged the sequence of cities so as to list them under each of the five main population groups in the order of their *net per capita bonded debt, excluding utilities.* All publicly owned utilities, whether "self-supporting" or not, are deducted by Miss Mohaupt in her tabulation of net debt. This is because of the practical difficulty of determining just when utilities are actually self-supporting, and because in general they earn most of, or more than, the cost of operation.

In contrast to utilities, there are certain "public service enterprises" which are partly or wholly self-supporting, such as golf courses, swimming pools, stadiums, convention halls, airports, etc. For this tabulation, however, it was considered essential to segregate the utilities only, leaving all other types of municipal activities to be grouped as general obligation debt, of which the major portion is supported from tax funds.

"In general there has been an uninterrupted trend in the past few years toward a reduced debt structure in the American cities included in this tabulation," the author concludes. "The figures for 208 American cities reporting in 1934 and 1939 further confirm a downward trend in debt. There is a tendency to reduce the outstanding debt, which is only possible when there are fairly large retirements with few, if any, new issues."

NET PER CAPITA BONDED DEBT, EXCLUDING UTILITIES

Group I—Population 500,000 and Over

City	Per Capita
Philadelphia, Pa.	$195.56
Buffalo, N. Y.	162.17
Detroit, Mich.	156.67
Baltimore, Md.	130.84
New York, N. Y.	126.38
Pittsburgh, Pa.	107.00
Cleveland, Ohio	100.29
Chicago, Ill.	95.95
Boston, Mass.	90.28
Los Angeles, Calif.	88.84
St. Louis, Mo.	83.96
San Francisco, Calif.	78.33
Milwaukee, Wis.	63.21

Group II—Population 300,00 to 500,000

City	Per Capita
Jersey City, N. J.	$172.33
Rochester, N. Y.	154.04
Newark, N. J.	135.69
New Orleans, La.	117.90
Minneapolis, Minn.	116.36
Louisville, Ky.	110.99
Kansas City, Mo.	109.70
Cincinnati, Ohio	92.69
Indianapolis, Ind.	74.21
Portland, Ore.	72.37
Seattle, Wash.	57.12

Group III—Population 100,000 to 300,000

City	Per Capita
Miami, Fla.	$318.84
Yonkers, N. Y.	209.65
Camden, N. J.	205.76
Knoxville, Tenn.	182.70
Syracuse, N. Y.	153.74
Albany, N. Y.	138.07
Providence, R. I.	132.62
Norfolk, Va.	129.88
Trenton, N. J.	128.82
Houston, Texas	124.58
Toledo, Ohio	123.30
Chattanooga, Tenn.	116.04
Richmond, Va.	115.09
Akron, Ohio	112.92
Fort Worth, Texas	112.62
Utica, N. Y.	111.39
Paterson, N. J.	110.60
Long Beach, Calif.	107.30
Dallas, Texas	98.12
Hartford, Conn.	96.26
Elizabeth, N. J.	95.60
Columbus, Ohio	95.58
St. Paul, Minn.	94.29
Bridgeport, Conn.	93.30
Des Moines, Iowa	93.12
Reading, Pa.	91.92
San Antonio, Texas	88.67
Erie, Pa.	88.19
Wichita, Kans.	85.11
Memphis, Tenn.	80.91
New Haven, Conn.	80.54
Nashville, Tenn.	80.50
Springfield, Mass.	77.71
Birmingham, Ala.	74.22
Omaha, Nebr.	74.14
Cambridge, Mass.	72.73
Duluth, Minn.	70.24
Lynn, Mass.	65.10
Tulsa, Okla.	65.10
Youngstown, Ohio	63.95
Flint, Mich.	63.80
Canton, Ohio	63.73
Dayton, Ohio	63.09
Scranton, Pa.	62.00
Jacksonville, Fla.	61.53
Kansas City, Kans.	60.69
New Bedford, Mass.	56.53
Gary, Ind.	54.51
Worcester, Mass.	53.59
Oklahoma City, Okla.	53.05
Denver, Colo.	48.94
El Paso, Texas	48.14
Salt Lake City, Utah	47.23
South Bend, Ind.	46.99
Grand Rapids, Mich.	45.20
San Diego, Calif.	44.68
Fall River, Mass.	43.97
Oakland, Calif.	42.97
Lowell, Mass.	42.86
Atlanta, Ga.	42.64
Somerville, Mass.	39.59
Wilmington, Del.	39.42
Honolulu, Hawaii	32.81
Peoria, Ill.	32.12
Evansville, Ind.	30.81
Tacoma, Wash.	20.20
Fort Wayne, Ind.	26.55
Spokane, Wash.	26.07

Group IV—Population 30,000 to 100,000

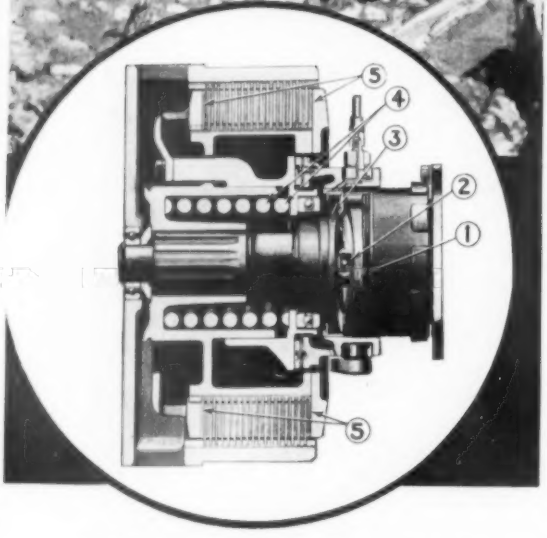
City	Per Capita
Atlantic City, N. J.	$378.05
Asheville, N. C.	366.37
New Rochelle, N. Y.	257.31
Dearborn, Mich.	249.66
Niagara Falls, N. Y.	197.05
Mount Vernon, N. Y.	165.42
Greensboro, N. C.	165.15
Winston-Salem, N. C.	162.44
East Orange, N. J.	143.14
Pawtucket, R. I.	139.41
Irvington, N. J.	130.58
Bayonne, N. J.	122.71
Waterbury, Conn.	121.70
Galveston, Texas	117.96
Union City, N. J.	114.30
Shreveport, La.	110.38
Johnstown, Pa.	108.64
Cleveland Heights, Ohio	106.58
Beaumont, Texas	106.42
Charleston, W. Va.	103.68
Schenectady, N. Y.	102.59
Sacramento, Calif.	102.29
Troy, N. Y.	101.83
Pueblo, Colo.	100.53
Durham, N. C.	98.15
Hamtramck, Mich.	96.83
Newton, Mass.	96.33
Pasadena, Calif.	94.36
Madison, Wis.	90.15
Glendale, Calif.	89.53
Charlotte, N. C.	89.33
Austin, Texas	89.27
Binghamton, N. Y.	87.91
Mobile, Ala.	87.53
St. Joseph, Mo.	86.98
Allentown, Pa.	86.44
Roanoke, Va.	86.38
Pontiac, Mich.	86.00
Charleston, S. C.	85.43
Portland, Maine	70.25
Springfield, Ohio	65.73
Fresno, Calif.	64.44
Bethlehem, Pa.	63.45
Lancaster, Pa.	61.98
Evanston, Ill.	61.82
Columbia, S. C.	61.81
Davenport, Iowa	57.73
Harrisburg, Pa.	57.71
Kenosha, Wis.	56.84
Chester, Pa.	56.23
Quincy, Mass.	55.67
Jackson, Mich.	55.55
Malden, Mass.	54.85
Lincoln, Nebr.	54.77
New Britain, Conn.	53.10
Oak Park, Ill.	52.94
Lakewood, Ohio	52.61
Racine, Wis.	52.25
Sioux City, Iowa	49.28
East Chicago, Ind.	47.86
Hammond, Ind.	47.62
Manchester, N. H.	45.94
Cedar Rapids, Iowa	45.32
Springfield, Mo.	45.08
Highland Park, Mich.	43.14
Hamilton, Ohio	42.29
Topeka, Kans.	41.06
San Jose, Calif.	39.84
Covington, Ky.	38.28
Decatur, Ill.	37.06
Lawrence, Mass.	32.76
Huntington, W. Va.	31.85
Rockford, Ill.	30.21
Macon, Ga.	30.10
Berkeley, Calif.	28.50
Brockton, Mass.	28.07
Kalamazoo, Mich.	28.05
Terre Haute, Ind.	26.91
Holyoke, Mass.	17.55
Wheeling, W. Va.	16.72
Lansing, Mich.	13.89
Saginaw, Mich.	12.65

Group V—Population 50,000 to 30,000

City	Per Capita
White Plains, N. Y.	$327.68
Perth Amboy, N. J.	220.48
Kearny, N. J.	186.89
Plainfield, N. J.	139.34
New Brunswick, N. J.	121.72
Stockton, Calif.	115.60
Bloomfield, N. J.	115.44
Wichita Falls, Texas	113.23
Portsmouth, Va.	112.24
Poughkeepsie, N. Y.	111.13
Orange, N. J.	104.32
Cumberland, Md.	102.26
Norwalk, Conn.	101.39
Stamford, Conn.	101.32
Portsmouth, Ohio	101.11
Auburn, N. Y.	98.36
Easton, Pa.	96.52
Santa Monica, Calif.	94.69
Jackson, Miss.	94.61
Woonsocket, R. I.	94.23
Muskegon, Mich.	93.27
Newburgh, N. Y.	91.61
Watertown, N. Y.	90.04
Pensacola, Fla.	86.36
Meridian, Miss.	82.92
Lima, Ohio	82.16
Hazleton, Pa.	81.11
Cranston, R. I.	73.15
Newport News, Va.	71.29
Tucson, Ariz.	71.17
Santa Ana, Calif.	69.32
Elmira, N. Y.	68.45
West Allis, Wis.	62.59
Rome, N. Y.	61.73
Columbus, Ga.	60.49
Ogden, Utah	59.28
New Castle, Pa.	58.98
Jamestown, N. Y.	58.05
Warren, Ohio	57.53
Lexington, Ky.	56.75
Norristown, Pa.	56.57
Fitchburg, Mass	56.31
Superior, Wis.	55.38
Santa Barbara, Calif.	53.54
Lynchburg, Va.	53.26
Paducah, Ky.	50.05
Nashua, N. H.	49.98
E. Cleveland, Ohio	49.73
Joliet, Ill.	47.99
Laredo, Texas	46.10
Marion, Ohio	44.77
Green Bay, Wis.	44.40
Butte, Mont.	43.96
Dubuque, Iowa	43.75
Mansfield, Ohio	43.66
Norwood, Ohio	43.01
Sheboygan, Wis.	42.42
Waterloo, Iowa	41.83
Newark, Ohio	41.50
Chelsea, Mass.	39.59
Battle Creek, Mich.	39.35
Sioux Falls, S. Dak.	39.05
Port Huron, Mich.	38.50
Richmond, Ind.	37.08
Meriden, Conn.	36.85
Revere, Mass.	34.98
Alameda, Calif.	34.40
Elgin, Ill.	34.39
Everett, Wash.	34.32
Joplin, Mo.	34.26
Steubenville, Ohio	33.83
Lorain, Ohio	33.62
Fort Smith, Ark.	33.13
Brookline, Mass.	33.10
Everett, Mass.	32.98
Williamsport, Pa.	32.23
Watertown, Mass.	31.42
Pittsfield, Mass.	30.76
Bellingham, Wash.	30.43
Colorado Springs, Colo.	30.12
Moline, Ill.	29.74
Haverhill, Mass.	28.80
Lewiston, Maine	28.30
Oshkosh, Wis.	25.98
La Crosse, Wis.	25.41
Kokomo, Ind.	25.27
Salem, Mass.	21.05
Quincy, Ill.	20.33
Chicopee, Mass.	20.24
Bay City, Mich.	19.23
Elkhart, Ind.	18.56
Arlington, Mass.	16.23
Bloomington, Ill.	15.82
Danville, Ill.	10.99

Not an Ounce of Lazy Horsepower

IN THE NEW INTERNATIONAL TD-18 DIESEL



FINGER-TIP PRESSURE releases the multiple-disc steering clutches in the TD-18 . . . the engine, not the operator, does the work through power-release actuators built into the clutches. The cross-section view, above, shows how they work. Only enough pressure is needed on the clutch lever to move a friction surface against the rotating clutch hub. Cam (3) rotates about a quarter turn on rollers (2), which separate cams (1) and (3). Cam (3) compresses main clutch spring (4) and releases clutch plates (5).

The power-release actuators relieve the operator of the hard pull ordinarily required to operate slow-speed, multiple-disc steering clutches —saving his strength and reducing fatigue. In addition, the clutches are *fully* engaged or disengaged—no drag on the discs, no unnecessary wear and heating. Brake assistance is seldom required when there is a load on the drawbar.

A NEW DAY is here for users of heavy-duty mobile power! The new 70 h.p. International TD-18 Diesel TracTracTor brings a new standard of operating performance and economy into the picture . . . more work, lower costs, bigger profits.

The power and flexibility of the International 6-cylinder *full* Diesel engine is coordinated to a fine point with other features in the TD-18 . . . *a higher percentage of the maximum drawbar horsepower*—70 h.p.—*can be kept continuously applied . . . get more work done per day at lower cost.*

The engine starts easily and quickly from the operator's seat . . . no time lost by man or machine in getting on the job.

The TD-18 is the easiest steering crawler tractor built. Engine power, not manpower, releases the steering clutches through power-release actuators built into the clutches.

Six forward and two reverse speeds provide close selection of traveling speed for load without loss in engine r.p.m. or maximum horsepower capacity. Automatic clutch brake facilitates fast shifting of gears.

These features enable the operator to take full advantage of the power available . . . and make the TD-18 *unusually easy to handle* and *easy on the operator.*

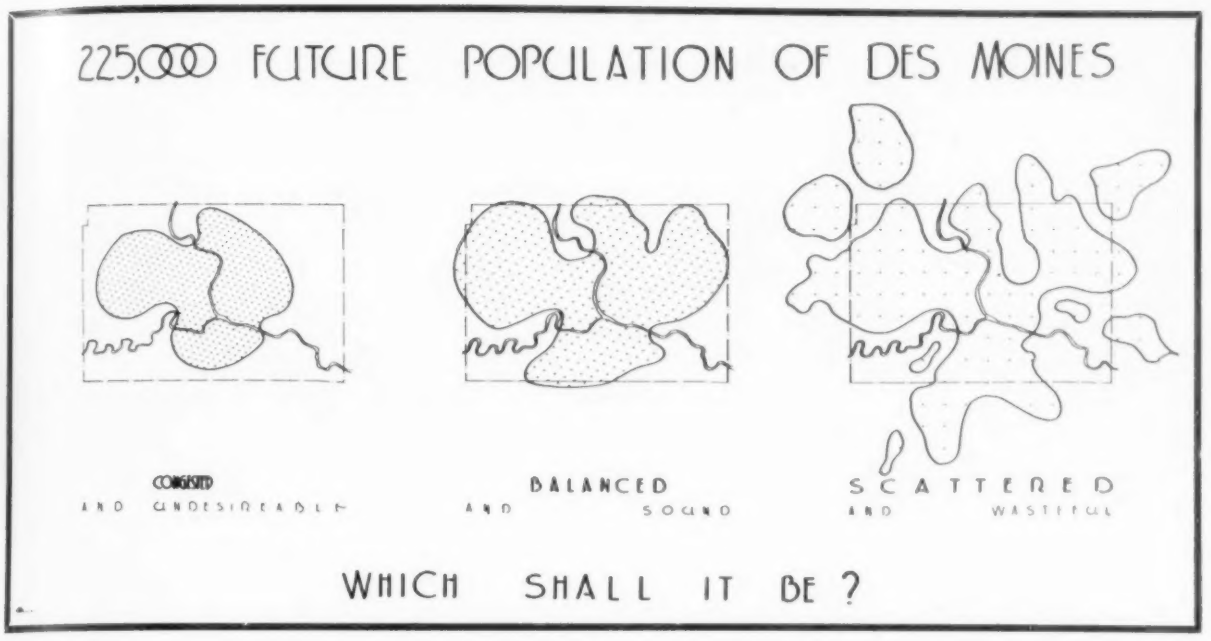
Find out what the TD-18 offers for your jobs. The nearby International industrial power dealer or Company-owned branch will give you full details. Remember that there are five other TracTracTors in the International line, also five wheel-type tractors, and eleven power units.

INTERNATIONAL HARVESTER COMPANY
(INCORPORATED)
180 North Michigan Avenue Chicago, Illinois

These Features Mean Efficiency, Low Cost, Long Life

1. Six-cylinder full Diesel engine.
2. Engine is started easily from the operator's seat.
3. Six forward and two reverse speeds.
4. Automatic clutch brake for fast gear shifting.
5. Easiest steering crawler tractor built. Power-actuated steering clutches.
6. Steering levers and pedals adjustable to suit operator.
7. Pivot shaft relieved of twisting stresses, and tracks kept in alignment, by ball-and-socket outer pivots, diagonal-arm inner pivot bearings, and roller stabilizer.
8. Track shoes keyed to track links to prevent loosening of shoes.
9. Triple-gear oil pump. Full-pressure engine lubrication at all working angles.
10. Positive track roller lubrication at all speeds. Quintuple-sealed track rollers have pressure gravity lubrication at low speeds and pressure lubrication at high speeds. Oil and dirt seals on both sides of sprockets. Self-cleaning sprocket wheel.
11. Tocco-hardened crankshaft with replaceable main and connecting rod bearings.
12. Unit construction. Each steering brake, steering clutch, track frame assembly, and other units, adjusted or replaced without disturbing adjacent parts.
13. Famous TracTracTor accessibility. More productive hours, low maintenance cost.
14. Allied equipment engineered for the TD-18 by well-known manufacturers.

INTERNATIONAL INDUSTRIAL POWER



Alternatives in Urban Growth

Among other interesting features in the twelfth annual report (dated 1938-1939) of the City Plan and Zoning Commission of Des Moines, Iowa, is a report by Eldridge Lovelace, Field Representative of Harland Bartholomew and Associates, from which the accompanying chart is reproduced. Discussing the need for a balanced and sound method of urban growth, the report says:

"A city plan must answer three major questions. How many persons will live in the city in the future? Where will these persons be located within the city? What physical facilities such as streets, parks, schools, transit routes, etc., will they need to make their city the best possible place in which to live and work?

"In accordance with the coming stabilization of population within the country and the predicted ultimate stabilization of the population of Iowa, the population of Des Moines is estimated to grow (from 142,559 in 1930) to 187,000 in 1950, to 220,000 in 1970 and 225,000 in 1990. After 1970 the city is expected to grow very little if at all.

"The location of this population within the city is a major planning problem in Des Moines. The city's corporate area is large. The present population is badly scattered. This thin spreading of the population on the land is making the provision of essential urban facilities such as sewers, water, street paving, schools, etc., exorbitant in relation to family income. The cost of these facilities increases as the density of population becomes smaller. Des Moines must have a more compact population pattern in the future if the city is to avoid bankruptcy (from the high cost of providing these facilities to a scattered population) or decadence (from the many substandard neighborhoods that develop when these facilities are not provided).

"A future population pattern is proposed to accommodate the expected population of 225,000. This pattern is not so dense that it would be socially undesirable, or so scattered as to become economically unfeasible. This plan indicates areas that should be developed and areas where urban development should be restricted or existing development abandoned. Included in the report are seven recommendations of methods to be followed to insure the development of a planned population pattern in Des Moines.

"The development of a predetermined population pattern is a new concept of city growth. In the past population has spread itself hit-or-miss on the land and has then been followed by street paving, sewers, parks, schools, etc. The population report recommends that certain areas be designated for development and that only these areas be provided with urban facilities and that this be the basic municipal policy. By proceeding in this manner, local governments have control over location of population. People will not live in areas that will never be supplied with parks, schools, water, etc."

Municipal Funds for Industries

As a means of attracting new industry and enterprise, four American cities have recently appropriated funds or levied special taxes to establish municipal and industrial promotion departments, the International City Managers' Association reports.

Buffalo, N. Y., by amending its city charter in April, established a division of publicity directed by the mayor and a seven-member board. The amendment provides that the board "shall be charged with the duty of advertising the city of Buffalo within and without its borders. . . ." To finance the board's work, $25,000 has been placed in the budget for the fiscal year beginning July 1, 1939, with the understanding that the appropriation will be supplemented by an equal amount donated by citizens, civic groups and associations, and business interests.

In *San Antonio, Texas*, the taxpayers voted approval of a charter authorizing a property tax not to exceed 5 cents per $100 to finance a nation-wide advertising campaign. An advisory committee decided, however, that a levy of 3 cents per $100 should be collected. Estimates are that $50,000 will be needed for the first year's campaign. None of the money is to be spent in Texas.

Voters of *Pittsburg, Kans.*, at a special election in April approved the levying of a tax, not to exceed ½-mill per $100 valuation of all taxable property in the city, to create a fund which must be used to induce industry to locate in the city. Galveston, Texas, is considering amending its city charter to allow a tax levy for community advertising and civic promotion.

Covington, Ky., recently established the position of municipal industrial director, whose job is to engage in public relations activities and attempt to induce industries to locate within the city.

The Association pointed out, also, that two New Jersey cities—Paterson and Newark—already are engaging in local industrial promotion activities, but in a manner different from the usual. The two cities use information obtained from industrial surveys, and base their campaigns on the belief that the value of an economic location will outweigh grants of free land, power, or tax exemption* to successful industrial organizations.

* *See warning by Kenneth J. McCarren, Vice-President, Detroit Board of Assessors, entitled "Luring Industry Through Tax Exemption," on page 97 of* The American City *for April, 1939.*

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Stratton & Stratton

220,000 operations and only ONE clock failure!

THE PENDULUM ESCAPEMENT, used only in Karpark Meters, is responsible for this "thoroughbred" performance in Washington, D.C.

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Karpark AUTOMATICS, with the sturdy, dependable PENDULUM escapement will give your city the same "thoroughbred" performance.

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Improving Municipal Administration

Current Items from the Public Administration Clearing House

Portland Plans "Pay-As-You-Go" Recreation

A TEN YEAR "pay-as-you-go" recreation plan recently voted for Portland, Ore., will make that city one of the few in the country with a comprehensive play program based on needs and financed from current revenues, the International City Managers' Association reports. Whereas many cities have bonded themselves heavily to secure park and play facilities, Portland expects to acquire land and complete improvements gradually throughout the next ten years.

Under the plan, which was voted as a charter amendment, the city will levy an annual fixed tax from 1939-1949 to finance the development. It is estimated that the levy will produce a revenue of slightly more than $100,000 a year. Land for the parks and playfields is to be acquired by the City Council from private owners through purchase or exchange of city-owned real property. The Council may also lease land with an option to purchase it for recreational purposes.

The backbone of the program, according to the Association, was a 1936 report of the City Planning Commission, based on analysis of such factors as population characteristics, neighborhood patterns, juvenile delinquency, and present recreational facilities of the city. The program authorizes the City Council to determine location of the new play areas in accordance with these findings. No project will be approved, however, until the City Planning Commission, in cooperation with community organizations, has prepared and submitted a detailed plan. The city and school district, which is a separate unit of government, has set up a joint committee to coordinate recreational facilities under the new plan.

Legal Status of House Trailers Clarified by Court Decisions

COURT decisions in Indiana, Michigan New York and Texas may clear up several legal problems which confront city officials when considering the application of local ordinances to house trailers, the American Society of Planning Officials reports. The decisions involve the legality of ordinances limiting the stay of trailers within a city's boundaries, the application of local housing acts to trailers, and the right of a city to tax trailers as real property.

The Indiana decision, by the State Supreme Court, held that cities have a legal right to limit the stay of a trailer within city limits, whether the trailer is parked on private land or in a public tourist camp. The case grew out of a Munster, Ind., ordinance limiting the stay of trailers to 30 days.

The Court held that municipalities have power to establish reasonable regulations for the protection of the lives, health and property of their citizens; and that such regulations are not unconstitutional merely because they affect the use of private property. This is an exercise of police power, the Court said. It held also that the 30-day provision was designed primarily to maintain the transient character of a tourist camp.

A decision by the Justice Court of Orchard Lake, Mich., held that application of housing acts to trailers is legal. In this case, a trailer was parked on a private lot and occupied as a dwelling. Under the Orchard Lake housing act, a provision requiring a specified room volume was violated.

The New York and Texas decisions may have an important bearing on future policy toward trailers as taxable property, the Society said. In New York, the State Supreme Court held in February that a portable (trailer) lunch wagon brought intact to a lot, set upon a brick foundation, and provided with utility connections such as electricity, is "erected upon or affixed to" the land and therefore taxable as real property even though it is readily removable upon termination of the lease.

The U. S. District Court of West Texas held at San Antonio in March that an automobile trailer detached from the automobile is a building. The case arose from an attempt to collect insurance for a death caused by a trailer fire. The policy specified that payment would be made only for death caused by the burning of a building.

Detroit Bans Carnivals Regardless of Sponsor

THE City Council of Detroit, Mich., expressing the belief that carnivals take more profits from a city than they earn for their sponsors, has banned all such enterprises from the city, regardless of the backers, the American Municipal Association reports.

The action was taken when the Veterans of Foreign Wars asked permission to hold a carnival, the proceeds of which would be used for relief purposes among members of the organization.

The Association said this ordinance is one of the first of its kind, but pointed out that Minneapolis and St. Paul, Minn., several years ago established city ordinances banning carnivals and circuses from the two cities for a 60-day period prior to the holding of the Minnesota State Fair.

Pedestrian Control Reduces Traffic Accidents

FACED with proof that communities whose pedestrians are strict observers of traffic rules have only about half the accident rate of those showing poor observance, cities are emphasizing pedestrian control, the International Association of Chiefs of Police reports. Cities where surveys have estimated better than 85 per cent pedestrian observance of traffic signals have been found to have an average accident rate of 173 per 100,000 population, as compared with a rate of 298 where there is poor observance, it was noted.

Washington, D. C., began pedestrian control in March, with warnings by police that traffic tickets were in the offing for violations of the new anti-jaywalking ordinance. Arrests for jaywalking or disobedience of any order by a policeman have now replaced warnings. They carry a maximum fine of $300 or 10 days in jail.

Salt Lake City, Utah, recently began arresting and obtaining convictions against jaywalkers and pedestrian light-crashers, after enacting an ordinance thoroughly defining the pedestrian's right-of-way at intersections and crosswalks. Although 90 per cent of the city's pedestrians had obeyed signals before the ordinance was given strict enforcement, observance is now on the increase.

Peoria, Ill., which used pedestrian traffic tickets during its annual safety campaign this spring, is reported as considering them as a permanent means of enforcing the law.

Pittsburgh and Philadelphia, Pa., confine pedestrian control to calling public attention to the need for traffic-law observance, by means of signs and placards. Pittsburgh's Better Traffic Committee, for example, has used WPA labor to make posters dramatizing pedestrian susceptibility to accidents. Five thousand cards a month are distributed for display to taxicab companies, building superintendents, industrial plants and department stores.

New York City in its new charter detailed special powers to the Police Department for enforcement of pedestrian traffic regulations. The city plans to use WAIT and WALK pedestrian signs that operate a few seconds ahead of the vehicle lights as one means of control at intersections.

West Coast cities, including Portland, Seattle, San Francisco and Los Angeles, are utilizing pedestrian lanes in midblock as well as at street intersections. A pedestrian in the lane has complete right-of-way against approaching cars, which must come to a dead stop. California's Legislature, also, has just approved an act defining pedestrian rights at crossings, which will be applicable throughout the state.

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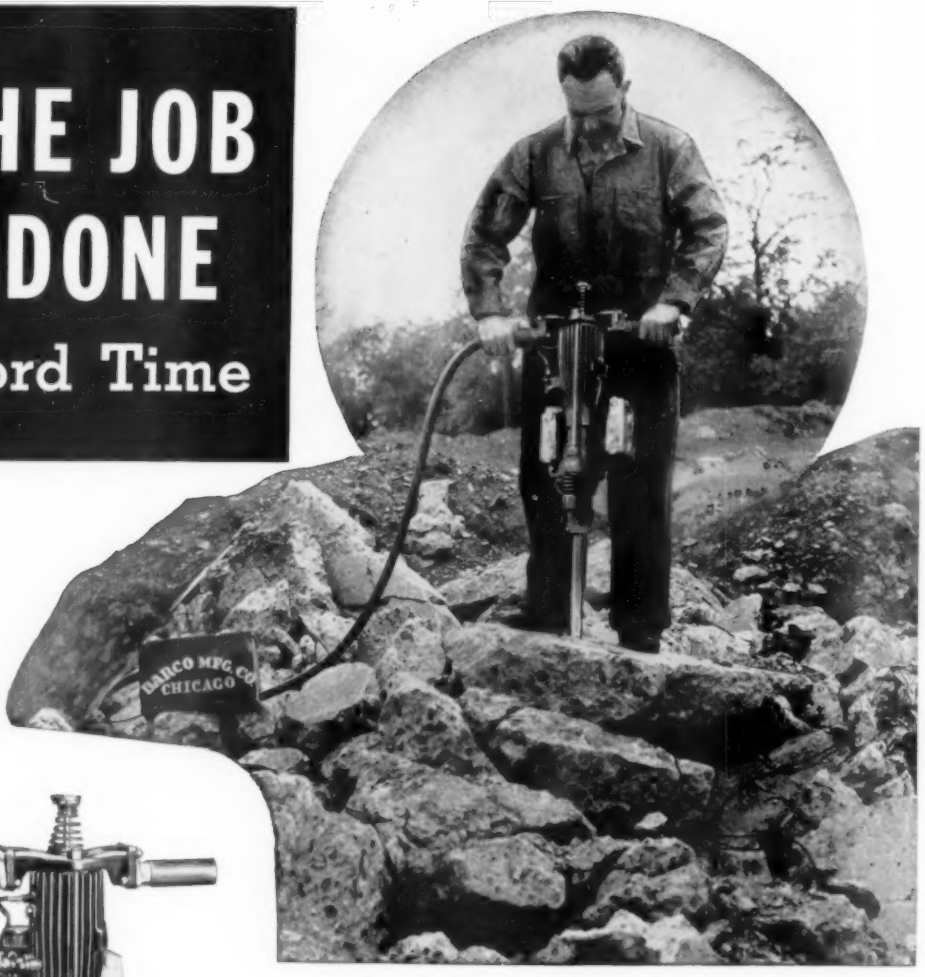

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Court Decision, New Law, Establish Parking Violation Responsibility

An automobile owner is responsible for parking violations involving his car even if it is driven by someone else, according to a Michigan Supreme Court decision and a new California law reported by the International Association of Chiefs of Police.

The Michigan Supreme Court handed down its decision in upholding the validity of a Detroit city ordinance, which says that the registration card or license plates displayed on the automobile "shall constitute in evidence a prima facie presumption that the owner . . . was the person who parked . . . where such violation occurred." The Court held that statutes frequently provide for such prima facie presumptions in criminal prosecutions until the defendant has produced evidence in his behalf. "It is a reasonable assumption that a person who owns an automobile parks it, and the provisions of the ordinance are not unreasonable or unconstitutional," the Court said.

The new California law says: "Proof that the defendant . . . was at the time of such (illegal) parking the registered owner of such vehicle shall constitute in evidence a prima facie presumption that the registered owner . . . was the person who parked . . . where . . . such violation occurred."

In connection with parking ordinances, the Association noted that under a recent ruling by the Chicago, Ill., Corporation Counsel, a motorist receiving a ticket for illegal parking is not legally bound to appear in court in answer to the complaint. To serve as a court summons, the ticket must be presented to the offender in person by an officer, or left at his home provided another copy is mailed to him. The Corporation Counsel, in making the ruling, pointed out that the police could save time by attaching parking tickets to automobiles and then following them up with personal service if the motorist does not respond voluntarily.

A provision similar to that contained in the Chicago ruling appears in the California law. It states that before a warrant of arrest shall be issued in connection with a parking violation, the defendant must be notified—either by personal delivery, or by deposit of the notice in the United States mail.

$1,000,000 *in Interest Saved on Water Bonds*

A saving of nearly $1,000,000 in interest on bonds issued to help build the new Milwaukee, Wis., water filtration plant is reported by the Municipal Finance Officers' Association. The bonds were issued with a callable feature, which gives the city the right to liquidate them, upon notice, before the maturity date.

Milwaukee issued $3,675,000 in 4 per cent mortgage bonds in 1933 to finance its portion of the filtration plant, and to secure a Works Progress Administration grant of $1,385,000. Instead of selling the bonds to WPA, the city sold them through regular investment channels. They were subject to call after three years.

About $600,000 of the bonds were liquidated with funds obtained by setting aside 16 per cent of the Water Department revenues for this purpose. The city now is calling in the remaining $3,086,000 in bonds of the original 4 per cent issue and, at the same time, liquidating another $320,000 in bonds with Water Department earnings. The refunding is being financed by an issue of $2,280,000 in bonds paying 2⅛ per cent and maturing at the rate of $200,000 a year from July 1, 1940, to 1955 inclusive.

Interest on the new issue will total $446,250, compared with $1,053,920 which would have been paid in interest had the original 4 per cent issue remained outstanding until the maturity date. The city previously had saved $370,000 in interest by issuing bonds during construction as the money was needed, instead of selling all the bonds at one time.

The call feature in the original bond issue provided that the city pay a premium at the time of the call equal to ¼ of 1 per cent of the principal amount of each bond for each year from the date the bonds were called to the date of maturity. The premiums are payments to the bondholders as compensation for surrendering their bonds before maturity. Thus, the holder of a bond maturing July 1, 1940, will receive a premium payment of $2.50, while the holder of a bond maturing in 1955 will receive a premium payment of $10. At this rate, total premium payments for the privilege of call on the original bond issue amount to $65,870.

The $1,000,000 saving resulted from the combination of callable bonds, reissued later at a lower interest rate, plus the shorter maturity date of the new bonds, and the savings on interest during construction by issuing bonds as money was needed.

Recent City Manager Appointments

Frank R. Chilton, Manager of San Leandro, Calif., from 1935 to 1937, has been appointed City Manager of Pittsburg, Calif., to succeed H. L. Denham.

W. O. Cuthbertson, County Engineer, has been appointed City Manager of Newton, Kans., to succeed Knowland L. Brode, who resigned effective June 15.

Robert Dorian, City Engineer of Lachine, Que., has been appointed City Manager of Shawinigan Falls, Que., to succeed N. J. A. Vermette, who resigned to become head of the Water and Power Co. of Montreal.

Francis D. Kuckuck, Mercer County Engineer, has been appointed City Manager of Celina, Ohio, to succeed Arch Robison, who has resigned to accept a position as Chief Engineer with the State Utilities Commission.

Steve Matthews has replaced C. Alexander as City Manager of Borger, Texas.

A. C. Nichols, City Manager of Clearwater, Fla., from 1934 to 1939, has been appointed first City Manager of Greenwood, S. C.

Murphy U. Snoderly, WPA Field Engineer, has been appointed first City Manager of Johnson City, Tenn.

Fred Rhodes, Director of Public Works, has been appointed City Manager of San Diego, Calif., to succeed Robert W. Flack.

Lee Tyer, a vice-president of the Exchange National Bank, has been appointed City Manager of Ardmore, Okla., to succeed Virgil R. Short.

Clarence E. Ridley,
Executive Director, International City Managers' Association.

The Municipal Bond Market

Recent sales of new issues from June numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$ 100,000	Framingham, Mass., Relief	.75	1-5	.66
1,100,000	Hartford, Conn., Refunding	1	1-10 Ser.	.997
300,000	Bridgeport, Conn., Street Extension Notes	1.25	1-10 Ser.	1.24
362,000	Rockford, Ill., Judgment Funding	1.50	8.33 Avg.	1.65
150,000	Charlottesville, Va., General Improvement	1.75	10.86 Avg.	1.66
188,804	Minneapolis, Minn., Special Street Improvement	1.75	5.33 Avg.	1.67
135,000	Fordson, Mich., School	1.75	4.33 Avg.	1.67
750,000	Cincinnati, Ohio, Railway Refunding	1.75	20	1.69
3,125,000	Kentucky, Bridge Revenue Refunding	1.75	2.7-7.85—O.-A.	1.7058
233,750	Orangetown, N. Y., Sewer	1.75	11.33 Avg.	1.71
200,000	Waukesha, Wis., Memorial Building	1.75	10.33 Avg.	1.71
160,000	Staunton, Va., Sewer	2.5	1-20 Ser.	1.79
150,000	Duluth, Minn., Permanent Improvement Unemployment Projects	1.80	2-16 Ser.	1.79
110,000	Wayzata, Minn., Sewer	2	12.33 Avg.	1.92
200,000	Bloomington, Ind., Water-Works Revenue	2.25	9 Avg.	2.20
265,000	Marshalltown, Iowa, Sewer Revenue	2.5	13.5 Avg.	2.496
658,000	Port of New Orleans, La., Port	3.25	11.5 Avg.	3.11
155,000	Fort Lauderdale, Fla., Causeway Revenue Debentures	4	———	4

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Traffic Control and Facilitation

Conducted by Publications Committee, Institute of Traffic Engineers, 60 John St., New York

Paul L. Green, Chairman; George W. Barton, William C. Brandes, Edward H. Eames, Ralph W. Eaton, William G. Eliot, III, James R. Guthrie, Harry C. Koch, E. B. Lefferts, Miller McClintock, William R. McConochie, Theodore W. Matson, Robert A. Mitchell, John B. Moriarty, William A. Van Duzer, Ralph F. Michel

Graphic Counters Analyze Traffic Behavior

By William G. Eliot, 3d

Highway Economist, U. S. Bureau of Public Roads

Forty-six years ago the Office of Road Inquiry was established in the U. S. Department of Agriculture, with an annual budget of $10,000. From this germ, forced into lusty growth by the arrival of the motor vehicle, came the Bureau of Public Roads, known throughout the world for its research in all problems of highway design, construction, planning, and utilization.

Uncle Sam is working on *your* traffic problem. Not perhaps on the particular difficulties down at your Perkins' Corner, but on the fundamental facts of traffic movement and the elements of traffic control that underlie all highway design and planning.

Space here permits only the briefest discussion of the current traffic research of the Bureau of Public Roads. First may be described a series of studies of traffic behavior, that is, of the characteristics of vehicular flow. During recent years the Bureau has developed elaborate apparatus for the analysis of moving traffic. A graphic time recorder has been used to record, through manually operated telegraph circuits, the instant of passage of every vehicle at each end of a measured section of highway. The speed and position of individual vehicles can be easily read from the permanent chart record.

What Is Road Capacity?

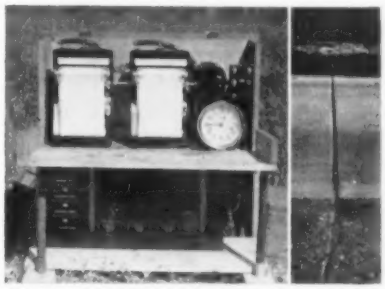
There has been much theorizing as to the capacity of highways, but the concept of capacity has never been satisfactorily defined. Traffic is neither a simple entity nor an abstraction, but a complex aggregation of individual vehicles that must be studied in their relationships to each other and to the highway on which they move. Capacity is clearly related to both the speed and the spacing of vehicles. But vehicles do not travel at uniform intervals nor at uniform speeds. Differences in individual speeds cause unequal spacing and a consequent "bunching" of vehicles. This in turn, by leaving gaps in the line, provides opportunities for overtaking and passing in the opposing lane of traffic. As the volume of traffic increases, the gaps decrease in number and in size, and the pace for all is finally set by the slowest vehicle.

From an enormous number of individual vehicle data, taken at many different locations, it has been found that vehicles following each other at the same speed tend to maintain a spacing of about 1½ seconds, regardless of the speed at which the traffic is moving. This fact permits a simple calculation of the maximum capacity of a highway if we assume that all vehicles can be kept moving at uniform speed. Under normal traffic conditions, on any given highway, regardless of speed or volume, from 67 to 75 per cent of the vehicles close up to less than the average spacing for all the vehicles. A further analysis of spacing reveals the frequency of "gaps" of different lengths, thus giving an index of the freedom to pass. At a volume of 1,100 vehicles per hour in each direction on a two-lane highway, there is practically no opportunity to pass, even if sight is unlimited.

The Bureau is making a study of passing. Air-impulse tubes or detectors placed on each side of the center line at 50-foot intervals along a half-mile of highway are connected to a synchronized battery of graphic recorders and make a complete record of the positions and speeds of all vehicles. The exact time and place where any vehicle leaves its own lane to begin passing another, the speed of both vehicles at every stage of the maneuver, and the final return to line, can be read from the charts. Data so collected are now being intensively analyzed.

The results of this research have a direct bearing on the design and alignment of highways. If a free flow of traffic depends on freedom to pass, then adequate sight distances must be provided to make that passing safe. It is essential that we know both how to distribute safe-passing sections along a highway, and how long to make them for the designed speeds.

The analysis of traffic capacity shows that slow vehicles are often a controlling element in the traffic stream and have an importance out of all proportion to their numbers. Heavily loaded trucks on hills are the most notorious offenders. An investigation of truck performance is therefore under way, from which will come



Photograph by U. S. Bureau of Public Roads

(Left) Graphic Recorder and (Right) Road Detector with Each Foot Controlling a Separate Electrical Circuit, to Show Passing Characteristics

data useful in the design of highway grades and in the determination of minimum standards for vehicle performance. This study has included the observation of random vehicles on the road as well as elaborate field and laboratory tests of new vehicles developed by manufacturers.

For many years the problem of transverse placement of vehicles on the highway has been recognized. Recently, the Bureau of Public Roads has developed a sectional road-strip or detector for use with a graphic recorder, capable of indicating to the nearest 6 inches the position of each wheel of any passing vehicle. Passing clearances can be observed, and the effect noted of "psychic" obstructions—conditions not on or in the roadway but sufficiently close to prevent drivers from making full use of available pavement width. Related to speed, these data are of value in standardizing lane widths.

What Causes Accidents?

All the studies above mentioned are concerned primarily with the normal behavior of moving traffic. As another phase of research, the Bureau of Public Roads, in cooperation with the Highway Research Board and other agencies, has directed its attention to the causes of highway accidents. Already published is an analysis of the accident records of nearly 30,000 drivers, selected at random from the Connecticut license files, which reveals the unquestionable existence of a class of "accident-prone" individuals. Nearing completion is a study of the value of motor-vehicle driver tests as a means of identifying these dangerous drivers before they have an opportunity to demonstrate their accident-making propensities publicly. The report of this investigation will be a significant contribution to our knowledge of the limitations and the po-

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says Police Chief Walter H. Wagner in this letter about Police Radio Equipment

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In police radio the trend today is RCA. More and more forward-looking police departments are discovering that it pays not only to buy reputable equipment—but the kind that provides the extra value of the most complete experience in radio—that of RCA!

The letter shown on this page—from the Chief of Police of Sheboygan, Wis.—is typical of scores we have received. They come from cities large and small—and are concrete evidence that RCA Police Radio is a worthwhile investment—an investment that will bring new efficiency and economy to the operation of your department. Full details on request.

City of Sheboygan
DEPARTMENT OF POLICE
SHEBOYGAN, WISCONSIN

WALTER H. WAGNER
CHIEF

R.C.A. Mfg. Co., Inc.,
Camden, New Jersey.

March 16, 1939.

Gentlemen:

More than six months of actual operation have passed since the installation of our RCA ultra-high frequency two-way radio communication equipment, and we know that you will be interested in learning of the successful results we have had.

It is proper to state, at this time, that prior to purchase, all types of various radio equipment were considered. After demonstrative tests were given, your equipment was chosen, and the efficient operation which we are experiencing evidences that our selection was logical. Communications have continued without interruption and maintenance costs have been trivial.

We are convinced that two-way radio communication has revolutionized police work in all of it's various phases, and has antiquated the old 'call-box' system of communication. All police calls, ranging from the smallest details to the most serious of alarms, now receive instantaneous attention and gratifying results.

Without question, police radio communication should and will become an integral part of law enforcement, and your organization may well be proud of your achievments in this regard and the contributions you have made. We are, also, proud to advance this cause and are particularly pleased in knowing that we have selected the best equipment RCA!

Sincerely yours,

DEPARTMENT OF POLICE.

Walter H. Wagner
Chief of Police.

WHW:EBH

Seated in one of the squad cars of the Sheboygan, Wis., Police Department, Chief Wagner is shown talking into microphone of RCA 2-way ultra-high frequency police radio equipment which has been in operation for almost a year.

•

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RCA *for* POLICE RADIO

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tentialities of such tests.

From the standpoint of the city traffic engineer, perhaps the most immediately practical work of the Bureau of Public Roads is its cooperation with the American Association of State Highway Officials, the National Conference on Street and Highway Safety, the American Association of Motor Vehicle Administrators and other agencies in promoting uniformity of traffic control and motor-vehicle regulation. In this activity the Bureau has functioned in part as a clearing-house and information service, and in part as a research agency. The only standards officially recognized by the Federal Government for use on Federal-aid highways are those set forth in the Manual on Uniform Traffic Control Devices, drafted by a committee of highway officials and traffic authorities on which the Bureau has been actively represented. Numerous questions relating to the standardizing of traffic signs and control devices have been referred to the Bureau for investigation or research, and its findings are generally accepted as authoritative. The Bureau is recognized as the official interpreter of the Manual, and has recently prepared standard color cards showing the correct shade of yellow for highway signs as specified in the Manual.

A special committee of the American Association of State Highway Officials, with the usual active cooperation of the Bureau of Public Roads, is now studying the latest development in highway marking, the "directional no-passing center line," with a view to recommending a uniform practice for all the states. The new type of line, now found in various forms in a number of states, has a distinct meaning for each direction of traffic, and keeps a vehicle on its own side of the road only as long as its sight distance is dangerously limited.

When you need authoritative information on the latest standards of traffic control and facilitation, remember that your Uncle Sam, who is really a very up-to-date old fellow, stands ready to help you.

A B C of the Parking Problem

As if in relief of an impossible situation, on July 16, 1935, the parking meter appeared in Oklahoma City. Its purpose was to systematize parking, by showing where to park in officially marked-off spaces and, by imposing a small charge, to ask the motorist whether he really needed to park in the congested district at all. If it were not worth a nickel to him, then he should certainly drive to an unmetered street, and walk the few blocks back.

The four years' record of the parking meter is now known to all who are concerned with business-district congestion. It made good wherever it was given a fair trial. Parking meters are now regulating parking in more than 100 cities, and are being considered for practically all other cities where parking is troublesome.

Not the Whole Answer

A number of people interested in parking regulation insist that parking meters are a palliative and not a cure for parking congestion. The complete cure consists of any or all of three medicines: (1) providing cheap or free off-street parking spaces within or close to the business district; (2) rigidly compelling motorists to park only in certain areas whether these are convenient or inconvenient; (3) installing parking meters to regulate curb parking and provide off-street space at nominal or no cost for long-time parking.

Obviously, the first step is to install parking meters. They are certain to take the kinks out of parking on the streets where they are installed. If the adjacent unmetered streets fill up and present a secondary parking problem, then more meters must be installed or municipal parking spaces provided for the all-day parker. In a few cities, such as Garden City, N. Y., where the business district is spread out and open, it is possible to provide ample municipal off-street parking facilities without also requiring parking meters. Where this is feasible, this is what should be done. On the other hand, the municipal parking space is a liability, whereas the parking meter pays for itself and allied traffic needs. Indeed, where both meters and off-street facilities are needed, the revenue from the meters can be made to pay for the off-street spaces. The District of Columbia is giving consideration to this economic plan right now.

To find facts on which to base recommendations to cities for the correction of the disorderly-parking evil, the Committee on Parking and Terminal Facilities of the American Automobile Association sent questionnaires to (1) traffic engineers, (2) merchants, (3) parking-lot operators, (4) garage operators, (5) real-estate boards, and (6) builders and architects, obtaining in each case data from 20 to 34 cities of 330,000 average population.

Extensive A.A.A. Study

In 10 out of 25 cities curb parking in the business district is such a serious problem that on the average it is prohibited entirely on 50 per cent of the business blocks. Where parking is prohibited or stringently restricted, the only visible solution is to leave cars at home, or park them outside the business district and in available lots and garages.

As to off-street facilities, 34 municipalities provide 42 lots accommodating a total of 3,660 spaces, and 3 buildings with a total of 516 spaces. Merchants provide 70 lots for 6,822 spaces, and 12 buildings for 2,360 spaces. Private operators provide 1,330 lots with a total of 115,000 spaces, and 461 buildings with a total of 78,000 spaces. Thus there are available in these cities a total of 125,480 spaces in lots and 80,906 spaces in garages, a total of 206,386 spaces, or quite liberal off-street facilities.

Why are they not patronized? The first reason is of course the convenience of curb parking. The second reason is the expense of private facilities. Inasmuch as private facilities overwhelm those furnished by both city and merchants, these shall be considered first.

Briefly, the average fees for parking in lots are 20 cents per hour, 26 cents for two hours, 41 cents per business day, $1.21 per week. In garages the average fees are 24½ cents per hour; 31 cents, two hours; 55½ cents, all day; $3.01 per week.

Cost of Municipal Facilities

Suppose that the municipalities should decide to take over all parking facilities, thus saving the rent or tax charges.

The parking-lot investment on the basis of the present average assessed valuation on the private lots would amount to $34,000,000. The garage investment would be $60,000,000. If wages and maintenance costs were only what the private operators are now paying, they would amount to $32 per lot space and $74 per garage space. Thus annual costs to the city would be

Interest (@ 3%)	$ 2,800,000
Operating	10,000,000
For 206,480 spaces	12,800,000
Per space per year	
Total cost	62
Operating only	48

The total cost of these spaces is 20 cents per day; operating cost 16 cents.

These are not excessive costs. Why then do not more cities take the bull by the horns and set out to provide adequate free or nominal-fee parking facilities? The reasons are:

(1) In most cities the taxpayers would not stand for it.

(2) In a great many cases the parking situation is not as bad as it is painted.

(3) An appreciable proportion of the cars need not be in the district at all and would not be there if their presence cost the drivers as little as 5 cents.

(4) There is no useful reason for providing expensive parking facilities for these non-essential junkets.

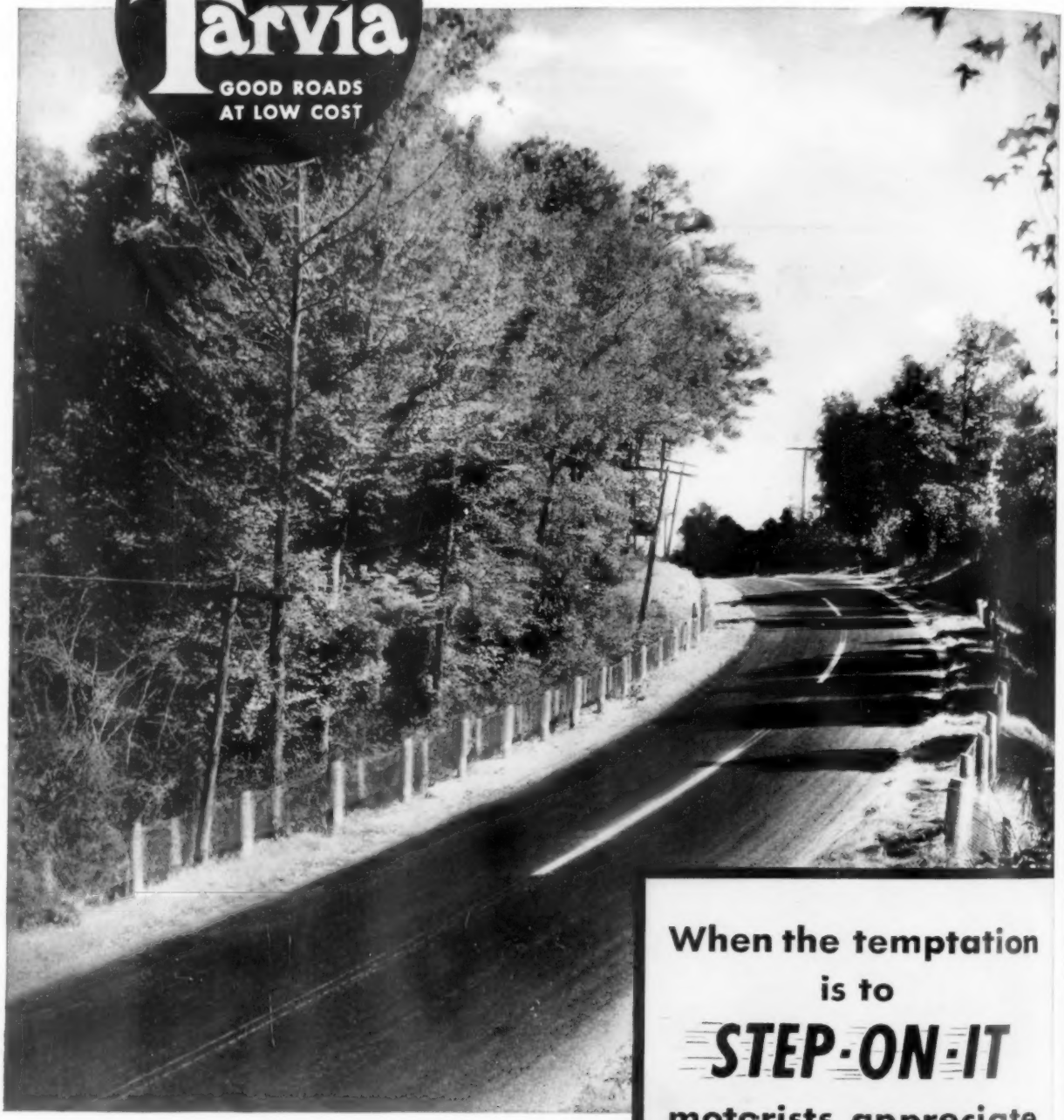
(5) There can be no clear-cut measures of the legitimate need for off-street parking facilities until curb parking has been efficiently regulated.

(6) Orderly use has not been made of the curb spaces.

(7) It would be an invasion of private business.

THE AMERICAN CITY recommends that all cities having parking congestion install parking meters; what to do afterwards, or ultimately, will then be seen much more clearly.

Barrett
Tarvia
GOOD ROADS
AT LOW COST



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Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

Zoning and Planning Notes

With the cooperation of
EDWARD M. BASSETT
Author of "Zoning" and of "The Master Plan"

Airports—Zoning

MARYLAND.—*Mutual Chemical Co. v. Mayor and City Council of Baltimore* (Maryland Circuit Court, Baltimore City, January 25, 1939).—In this case, the opinion of the Court, deciding it, is as follows:

"The Maryland so-called 'airport zoning' statute (Acts 1937, ch. 383), which restricts the erection of buildings and other structures on land adjoining public airports, is unconstitutional as to adjoining landowners in that it results in the confiscation of their property in violation of the due process clause of both Federal and state constitutions.

"In the instant case it is sought to be applied to land directly adjoining a portion of the Baltimore Municipal Airport. Enforcement would prevent the owner from erecting buildings or structures 6⅔ feet high at a distance of 100 feet from the perimeter of the airport; 13⅓ feet high at a distance of 200 feet; 20 feet high at a distance of 300 feet; and 33⅓ feet high at a distance of 500 feet.

"The right to construct buildings on its land is a property right of which the owner cannot be deprived except in the exercise of the police power for the benefit of the public generally. Under the Maryland law, ownership of the space above lands is vested in the owners of the surface subject to the right of flight by aircraft. . . .

"The statute cannot be sustained as an exercise of the police power. A zoning law, to be valid as such, must be for the benefit of the public generally. 'The zoning of an area surrounding an airport is rather for the benefit of those who desire to use aerial transportation and for those who use airplanes than for the general public.'"

EDITOR'S NOTE.—This decision would seem to be undoubtedly correct. The last sentence of the opinion (apparently quoted by the Court although its source is not given in the printed report) would seem to be open to some criticism. The zoning in this case would seem to be "rather for the benefit of those who desire to use aerial transportation and for those who own airplanes than for the general public"; but it would not seem to be impossible to draft an ordinance that would be for the benefit both of the owners of airplanes and the public as a whole.

With regard to the rights in the air space above the surface of the ground, see our Notes for December, 1936.

Zoning Ordinance — Variance—Boundary Lines

NEW JERSEY.—*Coriell v. Borough of Dumellen*, 4 Atl. 2d, 396 (Supreme Court, February 21, 1939).—The petitioner's plot of land is situated on one side of South Avenue partly in residence zone A, partly in residence zone B, in both of which "drive in" gas stations are forbidden. The other side of this avenue is in an industrial zone, where such stations are allowed. The petitioners ask the Board of Adjustment for a variance allowing them to construct a "drive in" station on their plot, because of its proximity to the zone where they are permitted. The Board refused to grant the issuance, and this Court sustains their refusal to do so, saying:

"If a municipality is to be zoned for or against various uses, it is inevitable that zones with differing restrictions should abut, and it is likely that a degree of apparent hardship will thus be visited upon the more restricted owner along the line of junction. It is not shown to us how this Court may for that, and that only, reason command the allowance of an exception by a Board of Adjustment without ultimately sounding the death knell of the whole zoning movement. . . . We discover no arbitrary disposition either in the ordinance or in the action of the Board of Adjustment thereunder in the instant case. We think that the determination was within the reasonable discretion of the Board."

Variance

NEW JERSEY.—*Leonard Inc. Co. v. Board of Adjustment of City of Trenton*, 4 Atl. 2d, 768 (Supreme Court, March 15, 1939).—The lot in question was placed by the zoning ordinance in a business zone. The surrounding land was residential. The plaintiff had obtained a permit for a self-service food market, employing approximately fifty persons. Adjoining resident owners appealed to the Board of Adjustment. That body voted that the zoning ordinance established "minimum requirements . . . for the promotion of the public health, safety, comfort, convenience and general welfare"; that a duty rested upon it to interpret the ordinance so that its general purposes and intent may be realized and substantial justice done; that the specification of prohibited uses in business zones must be read in the light of its general purposes and intent, to lessen congestion, promote health, secure safety from fire, etc.; that while not specifically prohibited as a use in a business zone by the ordinance, the food market "comes within the class of trades which the ordinance excludes from business zones, i.e., those permitting congestion; that the market is near schools, would induce street accidents, impair the general welfare and health, etc. This Court overrules the action of the Board of Adjustment, and sustains the granting of the permit for the food store. The market is a use permitted in a business district, and the Board cannot exclude it from such a district. Variances may be granted to obviate unnecessary hardship in applying the restrictions of the ordinance, not to increase these restrictions. The provision with regard to minimum requirements means that if the zoning ordinance is less restrictive than other ordinances, it shall not be held to weaken them. The fact that the surrounding country is residential is beside the point; the ordinance created a business zone here, and its provision with regard to it must prevail.

Zoning Ordinance—Building Code—Board of Appeals—Building Permit

New York.—*Cherry v. Brumbaugh, Building Inspector*, 7 N. Y. Supp. 2d, 956 (Appellate Division, November 28, 1938).—The petitioner sought a permit to build a six-story apartment house in a Class A residence district in the village of Larchmont. The Building Inspector refused to issue the permit because under the local zoning ordinance the erection of apartment houses in this district is forbidden, and because the plans for the proposed building do not comply with the local building code. The petitioner thereupon instituted these proceedings to compel the issuance of the permit, and the respondent Building Inspector moved to dismiss the petition on the ground that the petitioner must first exhaust his remedy by appeal to the local Board of Appeals before applying for relief to the Court.

The petitioner contends that the requirements of the zoning ordinance and the building code are arbitrary, unreasonable and unconstitutional. Such an issue the local Board of Appeals has no power to hear. Under certain circumstances it may grant a variance, but it has no jurisdiction to set aside an ordinance as unconstitutional, and therefore on this question the petitioner is not obliged to appeal to that body, and may appeal to the Court.

However, the question whether the plans comply with the building code, the local Board of Appeals is expressly empowered to hear and determine, and until this remedy of appeal is exhausted, petitioner is not entitled to appeal to the Courts.

The situation, therefore, is that as to the first of the grounds assigned for a refusal to issue the permit, the petitioner is entitled to appeal directly to the Court for relief; while on the second ground he must first exhaust his remedy before the local Board of Appeals before he can do so. Under these circumstances the determination of the Building Inspector cannot be adequately reviewed by the local Board of Appeals. The Courts are prohibited from assuming jurisdiction only if such a review is available. Hence, it is proper for the Court to take jurisdiction in order to decide the entire controversy.

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	LAND	IMPROVEMENTS	TOTAL VALUATION		FIRST	SECOND
30 96	32 67	45 00	77 67	291 25	145 63	145 62

NAME AND ADDRESS: JAMES K ARNOLD, 1620 OAK STREET

PROPERTY DESCRIPTION: S ½ OF NW ¼ OF WARD 14, LOT NO 114 PARCEL NO 436

Penalty | Discount | Amount Paid

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SECOND INSTALLMENT				FIRST INSTALLMENT			
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ground assigned for refusing the permit may be readily overcome, as the petitioner has submitted revised plans and offered to furnish whatever additional information is required to comply with the regulations of the building code.

Zoning — Reasonableness —Future Development

OHIO.—*Clifton Hills Realty Co. v. City of Cincinnati,** Court of Common Pleas of Hamilton County, March, 1939. (Not yet reported).—A zoning amendment changed a tract of 40 acres from residence "B" to residence "C." The occasion for the change was a proposed housing development on the tract, and the change permitted a more intensive type of multiple-family development. The suit was brought by the property owners adjoining the tract. In the original zoning ordinance of 1924, both the tract and the properties of the complainants were placed in residence "B." In 1933 there was a comprehensive amendment of the zoning ordinance under which two classifications, namely "B" and "C," took the place of the existing "B" classification. The construction of the homes of the complainants took place between 1924 and 1933. They were all of the single-family character with deed restrictions against multiple-family buildings. At the time the complainants' land was laid out and built upon, the zoning ordinance would have permitted an intensity of use such as the proposed development and such as was authorized by the zoning amendment against which the complainants brought their action.

The Court held in essence that the fact that the complainants chose to build single-family residences in a multiple-family zone did not warrant the invalidating of the amendment. Other features of the neighborhood were mentioned by the Court as indicating that the amendment was not unreasonable or arbitrary. On this question of arbitrariness or unreasonableness the report of the Planning Commission and the testimony of its engineer were given great weight.

EDITOR'S NOTE.—With regard to zoning of undeveloped land see the important New York case of *Arverne Bay Construction Co. v. Thatcher*, in our Notes for May and July, 1938.

* From News Letter of *American Society of Planning Officials*.

Massachusetts Decisions

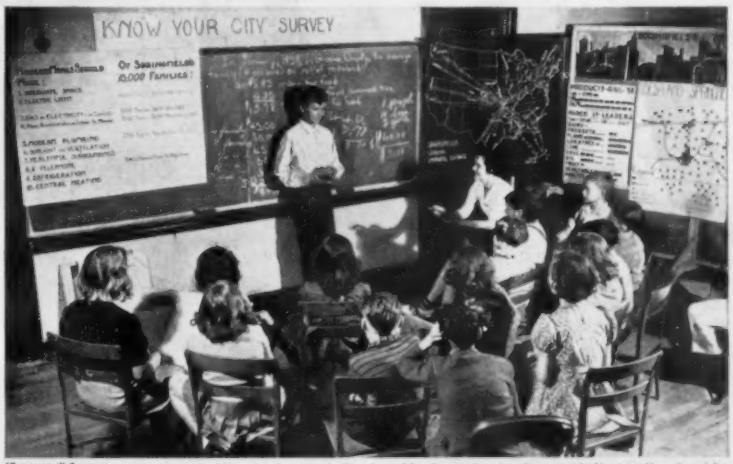
A Planning Forum, issued monthly by the Massachusetts State Planning Board, contains in its issue for February-March, 1939 (Vol. III, No. 2) a list of the decisions on zoning in Massachusetts, with short abstracts and annotations in some cases, as they appear in former bulletins of the Board; and a fuller abstract of decisions up to January 1, 1939. The former bulletins are still available in limited quantities. These bulletins, giving a complete statement of the attitude of the Courts in Massachusetts, will be invaluable to planners in all our states.

Practical Lessons in Citizenship for Springfield, Mo., Children

THE accompanying group of illustrations is reproduced, by permission, from an article in the June 5 issue of *Life*, entitled "Young Americans Study America," which describes and pictures the way in which children in the progressive public schools of Springfield, Mo., receive daily practical training in citizenship.

The illustrations show sixth-grade children who have gone out from their classrooms to see and study the actual workings of their city government. Their excursion may have started with a survey, from the roof of a tall building, of the city's physical layout and pattern—business and industrial zones, residential districts, parks, roads, railroads. Then they go down to the street; see their city at close range. Here they investigate poor housing conditions, visit a municipal court, inspect a new sewage-disposal plant, study fire control from a fire truck, see the stockyards, observe good housing conditions. The top illustration shows the class returned to school, discussing what they have seen, what is right and wrong with their city and what to do about it. The boy standing is giving a report on local housing problems.

Life says that the Superintendent of Schools, Harry Study, has been largely responsible for the use of progressive methods of education in all the public schools of Springfield, a city of about 58,000 people. The new methods have been introduced gradually without additional expense or costly new equipment, while the basic essentials of discipline, self-control and the 3 R's are not neglected.



"Know your city" surveys are quite popular in Springfield schools. Here sixth-grade pupils have just returned from a city excursion and will spend several days discussing it with their teacher (seated in rear). Boy standing is giving a class report on local housing problems. Scenes below show children learning first-hand how their city works.

THEY INVESTIGATE POOR HOUSING CONDITIONS

THEY SIT IN COURT TO STUDY LOCAL JUSTICE

THEY INSPECT A NEW SEWAGE-DISPOSAL PLANT

THEY STUDY FIRE CONTROL FROM A FIRE TRUCK

THEY INSPECT SPRINGFIELD'S BUSY STOCKYARDS

THEY INVESTIGATE GOOD HOUSING CONDITIONS

CONTINUED ON NEXT PAGE 41

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Court Decisions Affecting Municipalities

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City held liable for injury to pedestrian who fell into open sewer manhole in used and platted but unimproved street space (Illinois Appellate Court: *Kondrath v. City of Chicago*, 20 N. E. 2d, 109).

City held under no greater duty to keep safety islands free from slippery conditions than is required as to sidewalks (Illinois Supreme Court: *Stappelli v. City of Chicago*, 20 N. E. 2d, 43).

Town held liable for injury to pedestrian and for death of cow he was leading, due to high voltage wire that belonged to town and that lay in street (Indiana Appellate Court: *Town of Frankton v. Closser*, 20 N. E. 2d, 216).

Immunity from liability for negligence in exercise of governmental functions held to extend to automobile collision at street intersection, due to automatic signal lights showing green in all directions (New Jersey Court of Errors and Appeals: *Vickers v. City of Camden*, 3 Atl. 2d, 613).

City held not liable for injury to pedestrian on sidewalk when automobile skidded while being driven around a wide "Stop" sign in the street—placed there by the Police Chief to safeguard children who were coasting beyond (Washington Supreme Court: *Crowley v. City of Raymond*, 88 Pac. 2d, 858).

City (Denver)and abutter held liable for injury to woman who, in stepping backward to avoid approaching bus at bus stop on sidewalk, stepped into 5-inch depression surrounding tree (Colorado Supreme Court: *Belcaro Realty Inv. Co. v. Norton*, 87 Pac. 2d, 1114).

City held liable for injury to pedestrian who fell on sidewalk where one concrete slab was almost 3 inches higher than an adjacent slab and had remained so for several months (St. Louis Court of Appeals: *Lithegner v. City of St. Louis*, 125 S. W. 2d, 925).

City owning baseball field held not liable for injury to spectator in bleacher section when struck by foul ball, although the section was unprotected against batted balls, where protected seats were available in another section at higher prices (North Carolina Supreme Court: *Cates v. Cincinnati Exhibition Co.*, 1 S. E. 2d, 131).

Bond Issues

One suing on municipal bond interest coupon not attached to bond held to have burden of proving that coupon was attached when bond issued, where genuineness of coupon is denied by city (United States Circuit Court of Appeals, Fifth Circuit: *City of Hialeah v. Groves*, 101 Fed. 2d, 951).

Business Regulations

Ordinance held invalid so far as requiring money lenders to appoint agents to receive service of process, providing penalties for usury, etc., such provisions conflicting with state law (Texas Supreme Court: *Berry v. City of Ft. Worth*, 124 S. W. 2d, 842).

Civil Rights

City officials held properly enjoined against interfering with distribution of leaflets, holding public meetings and displaying placards by C. I. O. members (United States Circuit Court of Appeals, Third Circuit: *Hague v. Committee for Industrial Organization*, 101 Fed. 2d, 774).

Classification of Cities

Statute authorizing cities of 120,000 population, or more, to establish public parking stations within a time limit, held invalid under Kansas constitution as being a "special law." (Kansas Supreme Court: *Barker v. Kansas City*, 88 Pac. 2d, 1071).

Condemnation Proceedings

City condemning right to construct subway in street held liable to abutter for cost of extending building foundations necessitated by loss of lateral support caused by construction of subway (Missouri Supreme Court: *Siemers v. St. Louis Electric Terminal Railway Co.*, 125 S. W. 2d, 865).

Drainage

City held not liable for damages resulting from natural drainage of surface water onto private property (Kentucky Court of Appeals: *Talbert v. City of Winchester*, 125 S. W. 2d, 1002).

Elections

City Council held not entitled to appoint councilman after Court had acquired jurisdiction of a petition for a recall election, and hence the appointee could not recover from the successful candidate at the election salary collected by the latter (Texas Court of Civil Appeals: *Carter v. Harrell*, 126 S. W. 2d. 43).

Gifts to Cities

Donors of a cabin to a city on condition that it be removed to a park, and be restored and maintained as a historical landmark held not entitled to recover damages for breach of the condition (Wisconsin Supreme Court: *Steenis v. City of Appleton*, 284 N. W. 492).

Housing

Indiana slum clearance and housing acts held constitutional and right to injunction against their enforcement denied (Indiana Supreme Court: *Edwards v. Housing Authority of City of Muncie*, 19 N. E. 2d, 741).

Licenses

Clause exempting sale of "farm products" from license tax ordinance held not to exempt distributors of milk from paying tax (Kentucky Court of Appeals: *Pure Milk Producers & Distributors Assn. v. Morton*, 125 S. W. 2d, 216).

Camden ordinance, imposing an annual $200 revenue tax on food markets for each department leased, where more than four concessions are leased, upheld. Full text of Trenton and Camden ordinances appears in opinion (New Jersey Supreme Court: *Giant Tiger Corporation v. Board of Commissioners*, 4 Atl. 2d, 775).

Ordinance requiring taxicab operators to furnish $5,000 bond securing payment of damages for negligent injury to persons or property upheld (Louisiana Supreme Court: *City of Shreveport v. Breazeale*, 187 So. 33).

Minister held not covered by ordinance requiring that one engaging in "business" register, nor by ordinance licensing peddlers, where he went into homes playing phonograph records of sermons, preaching and selling and distributing religious tracts (Georgia Court of Appeals: *Thomas v. City of Atlanta*, 1 S. E. 2d, 598).

Jackson, Miss., ordinance requiring taxicab drivers to secure a permit, based on satisfying city officers as to qualifications, etc., and requiring payment of $1 fee, held valid and applicable to drivers doing only an interurban business (Mississippi Supreme Court: *Lowe v. Simmons*, 187 So. 214).

Notices

Under statute requiring that notice of appeal in a special assessment proceeding be directed to municipality, notice directed to "F. E. Grant as Clerk of the Incorporated Town of Rolfe, Iowa," held insufficient (Iowa Supreme Court: *Fuller v. Incorporated Town of Rolfe*, 284 N. W. 455).

Nuisances

Statute permitting suit against city for taking land for public use to be brought within two years held applicable to claim for damages to nearby property, for a continuing nuisance arising from the city's maintenance of a sewage-disposal plant and abattoir (North Carolina Supreme Court: *Ivester v. City of Winston-Salem*, 1 S. E. 2d, 88).

Official Appointments

Statute providing for appointment of alcoholic beverage commissioner for cities of first class by state officials, but providing for appointment in other cities by city officials, held unconstitutional (Kentucky Court of Appeals: *Chandler v. City of Louisville*, 125 S. W. 2d, 1026).

Police Measures

State liquor control provisions held not to preclude city from exercising charter or statutory authority by prohibiting dancing in places licensed to sell alcoholic liquors and sale of such liquors on Sundays and legal holidays (Michigan Supreme Court: *Mallach v. City of Mt. Morris*, 284 N. W. 600).

Public Buildings

An authorized purchase of land for municipal buildings held not vitiated by use of part for a public library building to be donated to town. But town could not pledge municipal credit for Federal aid in erecting library building without assent of electors (North Carolina Supreme Court: *Westbrook v. Town of Southern Pines*, 1 S. E. 2d, 95).

Public Utilities

High-school district held not exempt from paying for water furnished by municipality, the charges not being "taxes" and the school not being a "charitable" institution within the meaning of exempting provisions (Illinois Appellate Court: *Town of Cicero v. Township High School District*, 20 N. E. 2d, 114).

Municipal water board held not corporate entity distinct from city and therefore not subject to suit for damages by consumer whose water and light service was cut off (Georgia Court of Appeals: *Brownless v. Dalton Board of Water, Etc., Commission*, 1 S. E. 2d, 599).

Power company held entitled to contest proceedings by city to issue bonds to acquire competing distribution system. State commission held powerless to permit such bond issue without hearing evidence (Alabama Supreme Court: *Alabama Power Co. v. City of Ft. Payne*, 187 So. 632).

Municipal vote to acquire company's electric plant held not to preclude abandonment of project on municipality's becoming dissatisfied with subsequent award of compensation for plant, made by Public Service Commission. Award also held invalid because property was valued as of the date when the electors authorized acquisition and award was not finally made until nearly three years later (Wisconsin Supreme Court: *Wisconsin Power & Light Co. v. Public Service Commission*, 284 N. W. 586).

Special Assessments

Memorial plaza held not a "park" or "square" within charter authority for the levy of special assessments for establishment of same (Missouri Supreme Court: *City of St. Louis v. Pope*, 126 S. W. 2d, 1201).

Streets

Owner of abutting business establishment held entitled to recover damages from city for obstruction of access to his place of business due to maintenance by city of open ditch in street (Georgia Court of Appeals: *City of Rome v. Lecroy*, 1 S. E. 2d, 759).

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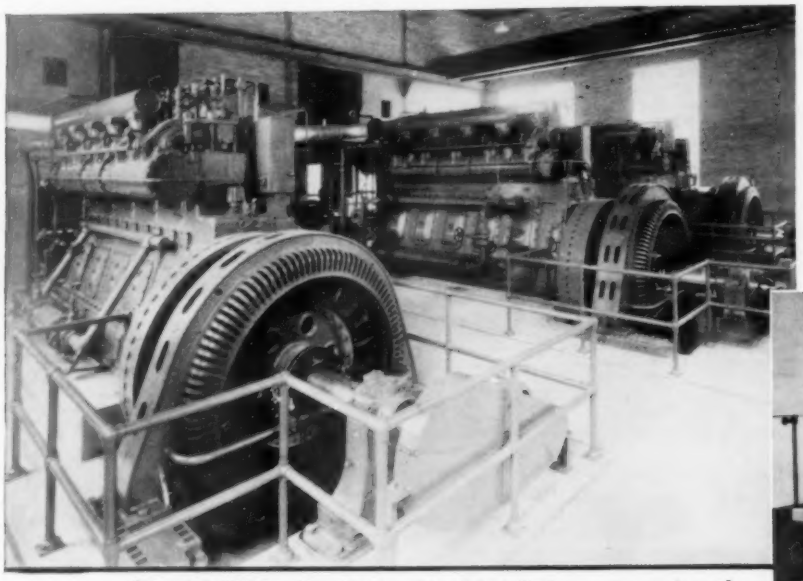

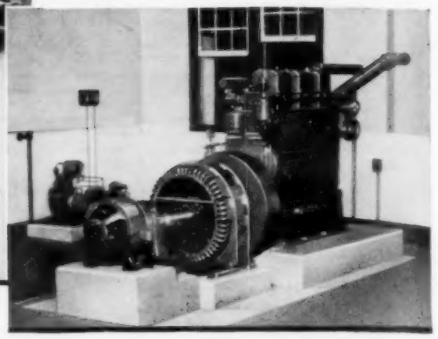

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Urban Real Estate

Principles of Urban Real Estate.—By Arthur M. Weimer, Professor of Real Estate and Land Economics, Indiana University, and Homer Hoyt, Principal Housing Economist, Federal Housing Administration. The Ronald Press Co., New York. 1939. $4.00 *from* THE AMERICAN CITY.

More than a mere handbook of the real estate business, this book analyzes the fundamental economic principles and business practices of real estate in a broad setting: as determined by (1) location factors, dependent on the whole economic background and structure of cities, and (2) market factors associated with the forces of competition and the functions they perform. Valuation, production, financing, marketing and management, public and private means of real estate regulation and control, are considered in the light of these principles and practices.

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Population

Population—Today's Question.—By G. F. McCleary. The Macmillan Co., New York. 1938. 282 *pp.* $2.10 *from* THE AMERICAN CITY.

This book is a summary presentation of the population question: past and present theories; an analysis of the present tendency toward decreasing population in the Western world; the implications of this tendency. The author points out what he believes will be the social and economic ill effects of a declining population; describes what has been done in various countries to offset the trend; and discusses the question of what should be done to arrest it. Although scholarly, this brief book reads easily and with interest for the layman to whom it is addressed.

Traffic

Traffic Safety Service.—National Safety Council, 20 N. Wacker Drive, Chicago, Ill. 1939. 16 *pp.*

This pamphlet describes the facilities and services of the newly formed Public Safety Service Bureau of the National Safety Council, available without charge to states and cities, to aid them in reducing their traffic accidents. These services include: general field service—analyzing the local problem and planning the general safety program; state legislation; driver license administration and training of examiners; accident records and analysis; traffic surveys and engineering; publicity and public education; school safety education and training; organization of safety councils.

Sewerage

The Hazard of Faulty Plumbing.—By Myron M. Stearns. An article in the "Survey Graphic," June 1, 1939. Survey Associates, Inc., 112 E. 19th St., New York. 3 *pp.*

Written for popular consumption, this article cites statistics showing the prevalence of potentially dangerous plumbing; points out cases in which sickness and death have resulted from this condition; analyzes its causes; and suggests remedies.

Government and Administration

City Management.—Henry G. Hodges, University of Cincinnati. F. S. Crofts & Co., New York. 1939. xx + 759 *pp.* $4.50 *from* THE AMERICAN CITY.

The author of this book states his purpose in the Preface: "This book attempts to present, in a non-solemn style, the practice and theory of city management." This has been accomplished in a most comprehensive and inclusive manner, covering every branch of municipal government. A listing of the contents will give some idea of its broad scope: The Changing City; Administrative Principles; The Civil Service; Personnel Management; Revenues and Taxation; Finance and Accounting; Expenditures and Debts; State Financial Supervision; Centralized Purchasing; Planning; Zoning; Slums and Housing; The Law Department; Public Health; Recreation and Parks; Public Welfare; Police Administration; Traffic; Fire; Public Works; Streets; Public Utilities; Wastes; Water; Courts; Education; Nominations and Elections; New Horizons. As for the general presentation, it is indeed "non-solemn." As Morris L. Cooke says in the Foreword, "It is refreshing to see his [the author's] vigorous and pithy style applied to a subject which is too often discussed in pure Brahmin."

Engineering Terminology

Engineering Terminology — Definitions of Technical Words and Phrases.—By Victor J. Brown, C. E., Publishing Director, Roads and Streets, and Delmar G. Runner, A. B., A. M., Assistant Materials Engineer, U. S. Bureau of Public Roads. Gillette Publishing Co., 330 S. Wells St., Chicago, Ill. Second edition, 1939. 439 *pp.* $4.00 *from* THE AMERICAN CITY.

The principal engineering fields covered in this revised, enlarged edition are: highways, streets, investment, water works, sewerage, geology, structures, architecture, air conditioning, aggregates, steel marine, engineering economics, railways. Appendices contain brief dictionaries of foreign words, and useful symbols and abbreviations.

Traffic

A Synopsis of Parking Meter Questions and Answers.—New Haven Taxpayers, Inc., 839 Chapel St., New Haven, Conn. 1939. 16 *pp.*

This is a thorough study, in brief outline form, of all phases of the parking meter question from an unbiased point of view, based on the experience of cities which have installed them. It defines, describes and evaluates parking meters; gives a summary of the reasons for their installation, the results accomplished, the acceptance of them by the public, in different cities; discusses their installation and administration, their cost, practical details such as mechanical differences in meters, legal aspects, their adaptation to New Haven's problems.

Elections

Objections to P.R. Answered.—By John H. Humphreys, Secretary, The Proportional Representation Society, 82 Victoria St., Westminster, London, S.W.1., England. 1939. 32 *pp.* 6*d.*

Clearing up many misunderstandings and lacks in understanding, this pamphlet answers, with numerous examples to support its contentions, the following common objections to the proportional representation method of election: that it is too costly; too difficult; elects cranks; fails at bye-elections; destroys the "personal touch"; increases power of party; leads to a multiplicity of parties which render strong, stable government impossible. P.R.'s supposed relation to the breakdown of democratic government in Germany and Italy is discussed.

Debt Administration

Local Government Debt Administration.—By Carl H. Chatters, Executive Director, Municipal Finance Officers' Association of the U. S. and Canada, and Albert M. Hillhouse, Ph.D., Professor of Economics, Davidson College. Prentice-Hall, Inc., New York. 1939. xii + 528 *pp.* $5.00 *from* THE AMERICAN CITY.

This is a practical manual based on the experience of debt administrators—directors of finance, treasurers, auditors, sinking-fund commissioners and other finance administrators—in cities of all types and sizes. The first four chapters deal with the steps prior to advertisement and sale; marketing the bonds—advertising for bids, sale and award, and delivery of bonds; essential steps to insure the prompt payment of interest and repayment of principal; sinking-fund administration for term bonds. Three chapters discuss special classes of debt: short-term borrowing and funding and its special problems; special assessment bonds; revenue bonds and general obligation debt incurred for utilities. A chapter on external debt reporting deals with periodic reports to taxpayers, bond dealers and investors. Voluntary refunding operations and debt adjustments, although not common problems, are also treated. The final chapter is devoted to the formulation of a debt policy.

Accounting

Accounting for Public Property.—Municipal Finance Officers' Association, 1313 E. 60th St., Chicago, Ill. 1939. 42 *pp.* 50*c.*

Deals with the method of providing adequate accounting records for publicly owned real property (land, buildings, improvements other than buildings) and personal property (machinery, equipment, office furniture and furnishings, etc.). It describes: the various classes of public property; their valuation; procedures in setting up records; inventorying and marking public property; establishing centralized control and general ledger control accounts. Included also are brief discussions of property statements and the problems involved in tax title property.

Government

Forms of Municipal Government.—National Municipal League, 309 E. 34th St., New York. 1939. 20 *pp.* 25*c.*

Here is a brief, to-the-point answer to the common question: "What forms of municipal government are there in the United States and how have they worked?" With the aid of graphs, and in clear, simple language, it defines, points out the advantages and disadvantages and describes trends in the use of the four major forms of city government in the United States—council-manager, strong mayor, commission, weak mayor.

Roadside Development

The Problem of the Roadside.—Prepared by the staff of the New England Regional Planning Commission (Regional office of the National Resources Committee), 2100 Federal Bldg., Boston, Mass. 1939. 32 *pp.*

The principal purpose of this pamphlet is to bring to the attention of the public the importance of roadside development for safe, efficient and pleasurable highway travel. It analyzes roadside problems, and the means which have been or might be used to remedy them. The latter include control of private property adjacent to the highway—roadside development or beautification, regulations for some specified purpose, zoning, purchase of easements; or public purchase of strips of land abutting the highway, either with or without provisions for restriction of access across this strip, as with freeways or parkways.

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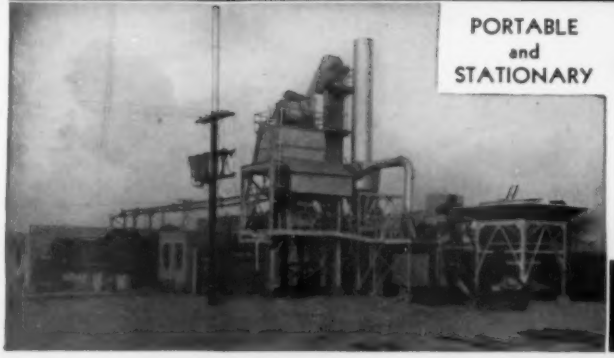

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Housing

The Housing Demand of Workers in Manhattan.—Central Savings Bank, Dry Dock Savings Institution, Emigrant Industrial Savings Bank, Equitable Life Assurance Society of the U. S., Union Central Life Insurance Co., New York; Prudential Insurance Company of America, Newark, N. J. 1939. *ix + 172 pp.* $15. *(Apply to any one of the above institutions.)*

Undertaken by a group of savings banks and insurance companies with the cooperation of the Federal Housing Administration, this book analyzes the potential housing demand in Manhattan, with particular attention to possibilities for developing the Lower East Side. It discusses the economic background and probable future of the city; the movement of land uses in Manhattan and the changing character of the Lower East Side; the probable demand for new apartments arising from population growth and other causes; the market for apartments in the Lower East Side, involving an analysis of the living habits of Manhattan's workers—incomes, dwelling locations, rentals paid, time and money spent on transportation, etc.; the apartment areas that compete with the Lower East Side. Extensive appendices include a description of techniques used in making the report, and statistical tables.

Fire Prevention

Bulletins of Special Interest to Fire Department Officials.—Prepared by The National Board of Fire Underwriters. Compiled and distributed by The Educational Committee, International Association of Fire Chiefs, 24 W. 40th St., New York. 1939. *v + 74 pp.* $1.00.

This booklet contains 72 reprinted bulletins, issued from July, 1933, to February, 1939, by the National Board of Fire Underwriters. They cover, with the aid of numerous examples, the various phases of fire prevention and fighting, including: air conditioning; motorized apparatus; combustion; construction—buildings and appurtenances; electricity; equipment; fire-alarm response; fire-fighting tactics; general fire prevention; reports of fires; fire streams; flammable liquids and gases; hose; inspections; refrigeration; sprinklers—automatic; water supply.

Civil Service

Draft of a State Civil Service Law.—National Civil Service Reform League, 521 Fifth Ave., and National Municipal League, 309 E. 34th St., New York. 36 *pp.* 50c.

This draft, prepared with the help of the Civil Service Assembly of the United States and Canada and other organizations concerned with problems of public personnel administration, covers all features of a state civil service law, including: organization of the commission; classification of positions; tests; appointments; regulations concerning hours of work; pay; records. One section covers the prohibition of political activity by civil service employees.

Taxation

The Direct Tax Burden on Low Income Groups.—By J. M. Leonard, Detroit Bureau of Governmental Research. National Municipal League, 309 E. 34th St., New York. 1939. 31 *pp.* 35c.

In this pamphlet are calculated the total state and local taxes which an average four-person family with $2,500 salary pays per year, as figured from rates in 150 cities of 30,000 or more population. The tax rates in cities of different sizes and the percentage that is collected by each unit of government are considered, as well as the proportion of each tax—property, sales, automotive, personal and income—which is paid.

Enforcement of Real Estate Tax Liens and Constitutional Barriers to Remedial Legislation for Tax Delinquents in Each of the United States.—By Louis F. Alyea, Chicago Title and Trust Co. Apply to Municipal Finance Officers Assn., 1313 E. 60th St., Chicago, Ill. 1939. 4 *pp.*

Various aspects of tax-delinquency laws, presented in quickly-scanned table form.

Government and Administration

Municipal Self-Government in Britain.—By George Montagu Harris, Research Lecturer in Public Administration at the University of Oxford. P. S. King & Son, Ltd., Orchard House, Westminster, London, England. 1939. *x + 342 pp.* 15s.

An inquiry into the practice of local government in ten of the larger British cities; whether there is self-government in local communities in Great Britain, or whether the increasing functions and power of the central government have reduced city governments to its mere agents; and, if there is still self-government, how does it function—how is the power used? The question is analyzed for the government of each of the ten cities—eight in England, two in Scotland—with respect to constitution and structure; officials; functions; finance; relations with central government departments and other authorities and organizations; corruption and graft; the electorate. Comparisons are made with the local governments of other countries.

Needless to say, this study has particular interest at a time when, in every country, to a greater or less extent, government is becoming more centralized and municipal home rule is losing ground.

Guide to the Municipal Government, City of New York.—By Rebecca B. Rankin, Librarian, Municipal Reference Library, New York. Published by The Eagle Library, Inc., Eagle Bldg., Brooklyn, N. Y. 1939. $1.25.

This fourth edition of the Guide describes for the taxpayer the government of New York City. It includes an account of every board, department, bureau, division, commission, committee, court and official body of this government. Chapter titles are: Executive; Legislative and Administrative; Finance; Taxation and Assessments; Education and Recreation; Health, Sanitation, and Public Welfare; Protection of Life and Property; Correction; Public Utilities; Law and Judiciary; Miscellaneous Activities; County Government. A short final chapter gives "Highlights of the New York World's Fair."

Democracy Must Think.—Columbia University Press, Morningside Heights, New York. 1939. *xi + 65 pp.* $1.00.

A transcript of an informal round table discussion on "Public Opinion in a Democracy," which took place at the last annual Conference on Government sponsored by the National Municipal League. This challenging discussion, which analyzes the subject along broad general lines, was conducted by seven leaders in the fields of journalism, radio, the movies, education.

Building Codes

Preparation and Revision of Building Codes, Report BMS19 of Building Materials and Structures.—National Bureau of Standards, Dept. of Commerce. Apply to Superintendent of Documents, Washington, D. C. 1939. 18 *pp.* 15c.

This report gives basic sources of information on the preparation and revision of building codes, and recommends procedure, with particular attention to eliminating the restrictive character of many present-day codes which do not take account of new safe materials and methods developed by the construction industry. It discusses the purposes, principles and standards of building codes; the organization of the building code committee; methods of presentation, arrangement and numbering; methods of recognizing new materials and new methods of construction; enforcement of the code.

Public Revenues

Public Revenues from Alcoholic Beverages, 1938. Distilled Spirits Institute, Inc., National Press Building, Washington, D. C. 25 *pp.*

Tables showing revenues from alcoholic beverages: in 1938, from each state, from state and local sources, from all sources; and totals for all years from 1933, including grand total for the six years.

Parks

Romance of the National Parks.—By Harlean James, Executive Secretary, American Planning and Civic Association. The Macmillan Co., New York. 1939. *xiv + 240 pp.* $3.00 *from* THE AMERICAN CITY.

This book, with its magnificent scenic illustrations, is indeed an exhilarating romance. The first part outlines the history of the national parks: their first discovery by the white man, the difficulties which were met by the leaders of the movement to set these areas aside as public land; their present services and facilities for recreation, inspiration and education; the future needs and possibilities for preserving and extending these national treasures. The second part of the book outlines a wealth of vacation trips through national parks in different sections of the country—the Northwest, the Far West, the old Southwest, and east of the Mississippi. More than this, the book discusses the concept of the park as a special form of land use, and the philosophy of parks and their relation to people.

Housing

Digest of Papers Presented at the Yale "Life" Conference on House Building Technics, at the Department of Architecture, School of the Fine Arts, Yale University, New Haven, Conn. Apply to "Life," Rockefeller Center, New York. 1939. 68 *pp.*

Delivered by experts on the new advances and trends in house-building technology—architects, engineers, housing authorities, researchers in industrial, university and general research laboratories—these addresses cover the problem of providing a "maximum of residential comfort at a minimum cost," and particularly of providing private housing within the means of lower-income groups. They cover a broad range of aspects: mass production; standardization; prefabrication; new directions in contemporary design, materials and techniques; heating and ventilation; the bearing of acoustical research on house building; new developments in steel for low-cost homes; mobile as opposed to fixed housing.

Civic Education

Forum Planning Handbook.—By John W. Studebaker, Commissioner of Education and Administrator, and Chester S. Williams, Assistant Administrator of the Federal Forum Demonstrations. The American Association for Adult Education, in cooperation with the Dept. of the Interior, Washington, D. C. Apply to Federal Forum Demonstrations, Washington, D. C. 1939. 71 *pp.*

This booklet outlines suggestions for the organization and administration of school-administered forums on citizenship. It describes steps in local forum planning—the use of the school building for meetings, organizing citizens' committees, employing leaders, directors and lecturers; discusses particular problems and features of organizing forums in small towns and in metropolitan communities and their suburbs; points out probable costs; and considers briefly leadership, forum techniques, promotion and policy problems.

Strikes

Strikes in the United States, 1880-1936.—By Florence Peterson. Bureau of Labor Statistics, Dept. of Labor. 1938. *Apply to Govt. Printing Office, Washington, D. C.* 183 *pp.* 20c.

This pamphlet gives a brief history of strikes up to 1927, analyzes them in some detail from that time to 1936. Based on data collected monthly by the Bureau, the latter section not only presents such factual statistics as the number and location of strikes per year, their duration, the labor organizations involved, etc., but investigates the causes and contributing factors of strikes, their results, the conditions under which they are likely to succeed.

Traffic

The Institute of Traffic Engineers has announced a 90-day sale (beginning June 30), of 1934, 1935, 1936 and 1937 issues of the Annual Proceedings. 1 copy, 80c; 2, $1.50; 3, $2.00; 4, $2.50. (Apply to the Institute, 60 John St., New York.)

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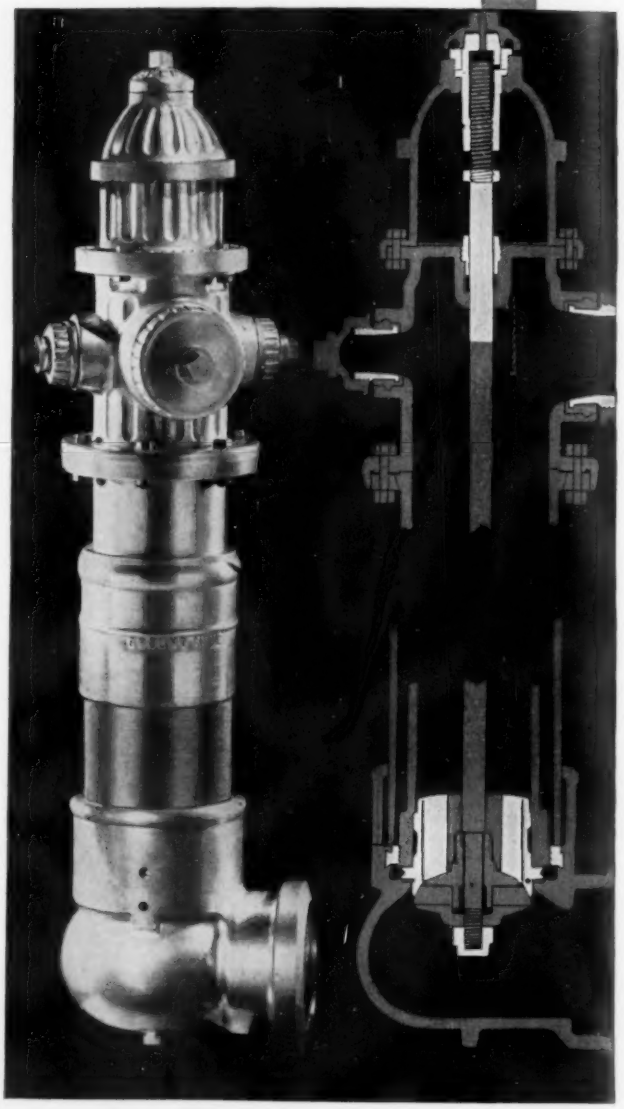

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Public Welfare

Social Administration.—By John J. Clarke, M. A., F. S. S., of Gray's Inn and the Northern Circuit, Barrister-at-Law. Sir Isaac Pitman & Sons, Ltd., London, England. Third Edition, 1939. x + 784 pp. 15s.

An exhaustive presentation of the whole intricate system of social administration and legislation in England as it has developed from Saxon times to the present, with an analysis of the social and economic conditions and the philosophy behind this development. Chapters cover: The State and Voluntary Agencies—outlining the development of modern collectivism and public welfare legislation, and the growth of voluntary associations; Public Health, Housing and Planning; Children and Young Persons; National Health Insurance; The State and Labor—including factory acts concerning health and safety and employment of women and children, wage regulations, methods of industrial peace; Unemployment; State Pensions; Conclusion.

Taxation

The Young Plan for Tax Collection.—By Thomas G. Young and Richard Rea Bennett. Wedge Publications, Baltimore. 1939. 105 pp. $10.00.

Tax collections in Baltimore came to 94.4% in 1937, 93.9% in 1938. How this was accomplished is recounted in this book, which presents the idea—carried out in practice in Baltimore—that the tax collection department should be operated with the same smoothness and efficiency as the collection department of a large corporation. More efficient accounting systems; more effective use of personnel; better utilization of merchandising methods in selling Government services to the public; the use of banking practices; establishment of a tax savings department; installment payment of taxes;—these are some of the methods of arriving at lower tax delinquency, which are clearly described in this book.

Reporting

The City of Johnstown Serves You.—By M. M. Chudy, City Assessor. Dept. of Accounts and Finance, Johnstown, Pa. 9 pp.

"The best bargain counter in Johnstown is our City Hall."

This is the idea that is driven home in this convincing, brief report. Besides two graphs and one table showing how the municipal income is spent, and a directory of city officials, the report contains the entertaining story of a typical day in the life of "the Millers, an average Johnstown family," starting with the morning milk which city inspectors have examined, the city policeman who directs the traffic when Mrs. Miller drives her husband to work, the zoning code which will prevent the new house going up in the vacant lot next to them from hurting the value of their home, and so on.

Parks

Some New York City Parks and Parkways.—By Francis Cormier, Landscape Architect, New York City Department of Parks. Article in April, 1939, issue of "Landscape Architecture," 9 Park St., Boston, Mass. pp 124-136.

This article describes, largely by impressive air views, the extensive recreational developments made in New York since 1934, with the help of WPA funds and under the administration of Park Commissioner Robert Moses; work which brings the total of the city's recreational areas to 10 per cent of the total of Greater New York's acreage. The article discusses the general organization of the Department for this work, and describes the main facilities for each of the new units.

Planning

Pedestrian Parade.—Board of Public Land Commissioners, Milwaukee, Wis. 1939. 27 pp.

This pamphlet gives the tabulated results of a WPA survey of the hourly pedestrian movement, in each direction, on streets in outlying business districts in Milwaukee. Results have been of interest not only to the City Planning Commission, but to realtors, tax assessors and retail store operators.

Municipal Law

Municipalities and the Law in Action—Proceedings of the Annual Meeting of the National Institute of Municipal Law Officers, Washington, D. C., Dec. 5, 6, 7, 1938.—Edited by John A. McIntire, Associate Professor of Law, The George Washington University, and Executive Director of the Institute, and Charles S. Rhyne, Attorney of the Institute. National Institute of Municipal Law Officers, 730 Jackson Place, Washington, D. C. xiv + 199 pp. $3.00.

The wealth of material in these discussions by municipal law officers from cities all over the country covers: civil liberties; federal-municipal cooperation and federal, state and city relations; tort liability; labor contracts by municipalities; parking meters and "fixless" traffic tags; vice; housing; zoning variances; public utilities; part-time employees and special counsel; the Evansville plan of martial law; taxation; modernizing law-department administration. The volume includes a description of the organization and constantly growing activities of the Institute.

Government and Administration

Municipal Government and Administration in Tennessee.—By Lyndon E. Abbott and Lee S. Greene, Dept. of Regional Planning Studies, Tennessee Valley Authority. Published by Division of University Extension, University of Tennessee, Knoxville, Tenn. 128 pp.

A summary description of selected aspects of city government and administration in Tennessee, made after a comprehensive survey of a group of representative cities. Chapters describe: legal status and power of the municipality; its functions; its relation to other units of government; its forms; personnel administration; revenues, property tax administration and expenditure control; indebtedness and debt administration; public service enterprises.

Parks and Recreation

Outdoor Recreation, Georgia.—Prepared as a part of The Park, Parkway, and Recreational Area Study, by the State Planning Board and the Division of State Parks, Historic Sites and Monuments, Department of Natural Resources, cooperating with the National Park Service. Apply to the State Planning Board, Atlanta, Ga. 1939. viii + 57 pp.

This illustrated survey, prepared with the help of the WPA, investigates Georgia's recreational resources and facilities and the agencies concerned with them, appraises the extent to which these facilities are being used, and the percentage of the state's population which is being served. Included is a consideration of general data on population and natural resources. The report analyzes the recreational needs of the state, and makes recommendations for a program which will supply these needs.

Planning

Plan—Annual Reports of 1937-1938, Los Angeles City Planning Commission. 37 pp.

Believing "the best interests of city planning will be served when the public becomes more conscious of the aims of planning," this readable report is directed to the layman. Attractive and dramatic photographs, charts and maps tell much of the story, which covers zoning activities; WPA planning projects; the civic center; subdivision planning; enforcement activities; public relations; the master plan of highways; the new yard ordinance with requirements for front, side and rear yards; and a financial statement.

Health

Health for 7,000,000 People.—1937 Annual Report, Dept. of Health, New York, and a Review of Developments from 1934 to 1938. 390 pp.

A record of constantly improving public health, this report explains the administrative set-up of the Department, and describes its far-reaching services in the fields of communicable disease, school hygiene, infant and maternity hygiene, research, food and sanitary control, public health nursing, vital statistics.

Libraries

Current Issues in Library Administration—Papers Presented Before the Library Institute at the University of Chicago, August 1-12, 1938.—Edited with an Introduction by Carleton B. Joeckel. The University of Chicago Press, Chicago, Ill. 1939. xii + 392 pp. $2.00 from THE AMERICAN CITY.

Given by experts in public administration and education as well as library administrators, these papers deal with the internal operation of the library machine considered as a subdivision of local government. Besides discussing general principles of administration and library objectives, they cover: the role of the board; departmental organization; the administration of branch systems; the administration of technical processes; financing the library; measurements in library service; personnel; public relations, interpretation of the public library and publicity. A selected reading list is included.

Public Buildings

Small Public Library Buildings.—Prepared for the American Library Association Committee on Library Architecture and Building Planning, by John Adams Lowe, Chairman. Apply to the Association, 520 N. Michigan Ave., Chicago, Ill. 1939. 47 pp. $1.50.

A guide on planning and erecting small library buildings. The part that the building committee, librarian and architect should play in carrying out such a project is described. Cost, size, site, interior and exterior design, book capacity and special lighting problems are discussed. Photographs, plans of interiors and brief descriptions are given of 24 particularly attractive and well-planned libraries in different parts of the country. It is interesting to note the fitness of the style of architecture and type of each building to the character and local conditions of the community in which it is situated.

Port Development

Port Study, Georgia.—State Planning Board, Atlanta, Ga., with the assistance of the WPA. 1939. vi + 118 pp.

This broad study of Georgia's ports gives also a general picture of the water-borne commerce of other seaports on the South Atlantic and East Gulf coasts, made for the purpose of comparing these seaports with Georgia's. Trends in Georgia's foreign and domestic commerce, and the commodities composing them, are examined. The value and direction of manufacturing and agricultural production, and of transportation and interchange, within Georgia, are pictured. Harbor resources and port facilities are described, and new opportunities and possibilities for further development, based on calculated trends, are outlined.

Other Reports Received

CHICAGO, ILL.—Report, Department of Law, 1938. By Barnet Hodes, Corporation Counsel. 85 pp.

COLUMBUS, OHIO.—Annual Report, Ohio Conference on Water Purification, held Sept. 27 and 28, 1938. Office of Secretary, Dept. of State Bldg. 110 pp. $1.00.

DR.-ING K. IMHOFF, beratendem Ingenieur, Essen, Germany: Rohstoffvergeudung im Abwasserwesen. (Ein Auszug des Vortrages ist in der Zeitschrift, *Die Städtereinigung*, 1938, S. 217 erschienen.) Nach einem Vortrag bei der Rohstoff-Tagung der Abwasserfachgruppe der deutschen Gesellschaft fur Bauwesen in der Krolloper, Berlin, am 21.6.1938. 5 pp.

Also by Dr. Imhoff:

Wie berechnet man hochbelastete Tropfkörper? Sonderdruck aus: *Gesundheits-Ingenieur*, 61 (1938) H.25 S. 350/353. 3 pp.

Sewage Disposal in Germany. Reprinted from *Water Works and Sewerage*, March, 1939. 4 pp.

Taschenbuch der Stadtentwässerung. 1939. 252 pp. RM. 6.50.

FORT WORTH, TEXAS.—Annual Report, year ending Sept. 30, 1938. 110 pp.

A CONVENTION HIGHLIGHT

WE WERE delighted at the interest displayed in our exhibit at the convention last month. Mayors, city managers and other municipal officials, engineers, superintendents, friends, dealers and competitors dropped in to look us over and say "hello".

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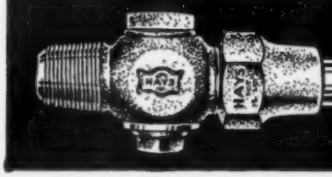

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Conventions - - When and Where

Meeting is annual convention unless otherwise designated

JULY 17-19.—OGDEN, UTAH.
National County Officers' Association. Sec.-Treas., George F. Breitbach, Court-House, Milwaukee, Wis.

JULY 23-28.—STANFORD UNIVERSITY, CALIF.
Western Conference for Commercial and Trade Executives. Business Mgr., Leonard E. Read, 1151 S. Broadway, Los Angeles, Calif.

JULY 25-27.—ROCHESTER, N. Y.
New York State Association of Chiefs of Police. (Powers Hotel.) Sec.-Treas., R. W. Morris, P. O. Box 346, Geneva, N. Y.

AUGUST 1-3.—PITTSBURGH, PA.
Pennsylvania Chiefs of Police Association. (William Penn Hotel.) Sec., F. B. Titus, Lansdowne, Pa.

AUGUST 9-16.—CALIFORNIA.
American Transit Association. (9-11, Biltmore Hotel, Los Angeles.) (12-16, Fairmont Hotel, San Francisco.) Gen. Sec., Guy C. Hecker, 292 Madison Ave., New York.

AUGUST 13-19.—EVANSTON, ILL.
National Institute for Commercial and Trade Organization Executives. (Northwestern Univ.) Sec., C. R. Miles, 832 First Nat'l Bank Bldg., Chicago, Ill.

AUGUST 14-17.—CEDAR RAPIDS, IOWA.
League of Iowa Municipalities. Sec.-Treas., Frank G. Pierce, Marshalltown, Iowa.

AUGUST 17-19.—WRIGHTSVILLE BEACH, N. C.
North Carolina League of Municipalities. (Ocean Terrace Hotel.) Exec. Sec., Patrick Healy, Jr., 704 Raleigh Bldg., Raleigh, N. C.

AUGUST 21-25.—SAN FRANCISCO, CALIF.
Illuminating Engineering Society. (Hotel Fairmont.) Gen. Sec., A. D. Cameron, 51 Madison Ave., New York.

AUGUST 22-24.—NEW YORK CITY.
National Shade Tree Conference. (Hotel Astor.) Sec.-Treas., L. C. Chadwick, Ohio State Univ., Columbus, Ohio.

AUGUST 24-25.—DULUTH, MINN.
American Water Works Association—Minnesota Section. (Duluth Hotel.) Sec.-Treas., Ronald M. Finch, Wallace & Tiernan Co., Inc., 414 Flour Exchange, Minneapolis, Minn.

AUGUST 27-30.—CLEVELAND, OHIO.
American Cemetery Owners Association. (Hotel Statler.) Exec. Sec., Roy Hatten, 408 Wolverine Bldg., Ann Arbor, Mich.

AUGUST 31-SEPTEMBER 1.—BETHLEHEM, PA.
League of Cities of the Third Class in Pennsylvania. (Hotel Bethlehem.) Sec., Herman A. Early, City Hall, Harrisburg, Pa.

AUGUST 31-SEPTEMBER 1.—ST. GEORGE, UTAH.
State Municipal League of Utah. (Liberty Hotel.) Sec., T. McCoy, Public Safety Bldg., Salt Lake City, Utah.

SEPTEMBER, 2D WEEK.—NEW BRAUNFELS, TEXAS.
League of Texas Municipalities. (Faust Hotel.) Exec. Sec., E. E. McAdams, 2223 Guadalupe St., Austin, Texas.

SEPTEMBER 6-9.—PRINCETON, N. J.
Governmental Research Association. (Princeton Inn.) Sec.-Treas., Robert M. Paige, 1313 E. 60th St., Chicago, Ill.

SEPTEMBER 7-8.—CHARLOTTESVILLE, VA.
American Water Works Association—Virginia Section. (Univ. of Virginia.) Sec., H. W. Snidow, 119 State Office Bldg., Richmond, Va.

SEPTEMBER 11-14.—SUN VALLEY, IDAHO.
Montana National Bituminous Conference. Address: Gen. Chmn., D. A. McKinnon, Montana State Highway Dept., Helena, Mont.

SEPTEMBER 12-14.—KANKAKEE, ILL.
Illinois Municipal League. Sec., A. D. McLarty, 500 E. Capitol Ave., Springfield, Ill.

SEPTEMBER 12-15.—MONTREAL, QUE.
New England Water Works Association. (Hotel Windsor.) Sec., Frank J. Gifford, 615 Statler Bldg., Boston, Mass.

SEPTEMBER 14-16.—BISMARCK, N. DAK.
League of North Dakota Municipalities. (Patterson Hotel.) Address: Exec. Sec., Myron H. Atkinson, City Auditor, Bismarck, N. Dak.

SEPTEMBER 14-15.—RAPID CITY, S. DAK.
South Dakota Water and Sewage Works Conference. (Hotel Alex Johnson.) Sec., W. W. Towne, State Board of Health, Pierre, S. Dak.

SEPTEMBER 14-15.—WAUSAU, WIS.
League of Wisconsin Municipalities. Sec., Frederick MacMillin, 30 E. Johnson St., Madison, Wis.

SEPTEMBER 18-21.—PHILADELPHIA, PA.
American Institute of Park Executives. (Bellevue-Stratford Hotel.) Exec. Sec., Will O. Doolittle, Box 422, Tulsa, Okla.

SEPTEMBER 18-19.—DENVER, COLO.
American Water Works Association—Rocky Mountain Section. (Shirley-Savoy Hotel.) Sec., B. V. Howe, State Office Bldg., Denver, Colorado.

SEPTEMBER 18-20.—JOHNSTOWN, PA.
American Water Works Association—Western Pennsylvania Section. Sec., E. P. Johnson, 418 Flannery Bldg., Pittsburgh, Pa.

SEPTEMBER 18-21.—OAKLAND, CALIF.
League of California Municipalities. Sec., Richard Graves, 223 City Hall, San Francisco.

SEPTEMBER 18-19.—OLD POINT COMFORT, VA.
League of Virginia Municipalities. Exec. Sec., Morton L. Wallerstein, 902 Travelers Bldg., Richmond, Va.

SEPTEMBER 20-22.—LANSING, MICH.
American Water Works Association—Michigan Section. (Olds Hotel.) Sec., M. N. Gerardy, Water Board Bldg., Detroit, Mich.

SEPTEMBER 20-23.—SAN FRANCISCO, CALIF.
International Association of Fire Chiefs. (Fairmont Hotel.) Sec., James J. Mulcahey, 16 Franklin Ave., Yonkers, N. Y.

SEPTEMBER 20-21.—DANVILLE, KY.
The Kentucky Municipal League. (Hotel Gilcher.) Exec. Sec., Carl B. Wachs, Administration Bldg., Univ. of Kentucky, Lexington, Kentucky.

SEPTEMBER 22-23.—DICKINSON, N. DAK.
North Dakota Water and Sewage Works Conference. Acting Sec.-Treas., L. K. Clark, Bureau of Sanitary Engineering, Bismarck, N. Dak.

SEPTEMBER 25-27.—WICHITA, KANS.
League of Kansas Municipalities. (Hotel Lassen.) Exec. Sec., John G. Stutz, Lawrence, Kansas.

SEPTEMBER 28-30.—MORGANTOWN, W. VA.
American Water Works Association—West Virginia Section. (Morgan Hotel.) Sec., John B. Harrington, State Dept. of Health, Charleston, W. Va.

SEPTEMBER 29-30.—WINCHENDON, MASS.
New England Sewage Works Association, Fall meeting. (Toy Town Tavern." Sec.-Treas., L. W. Van Kleeck, State Dept. of Health, Hartford, Conn.

OCTOBER 5-6.—READING, PA.
American Water Works Association—Four States Section. (Berkshire Hotel.) Sec.-Treas., Carl A. Hechmer, Washington Suburban Sanitary Dist., Hyattsville, Md.

OCTOBER 5-6.—TOLEDO, OHIO.
Ohio Conference on Sewage Treatment. (Commodore Perry Hotel.) Sec., B. M. McDill, Dept. of Health, Columbus, Ohio.

OCTOBER 9-10.—SANTA FE, N. MEX.
National Parks Conference. American Planning and Civic Association. Exec. Sec., Harlean James, 901 Union Trust Bldg., Washington, D. C.

OCTOBER 9-11.—PITTSBURGH, PA.
American Public Works Association. Exec. Dir., Frank W. Herring, 1313 E. 60th St., Chicago, Ill.

OCTOBER 9-12.—SAN FRANCISCO, CALIF.
International Association of Chiefs of Police. (Fairmont Hotel.) Exec. Vice-Pres., William P. Rutledge, 1313 E. 60th St., Chicago, Ill.

OCTOBER 9-12.—DETROIT, MICH.
International City Managers' Association. (Hotel Statler.) Exec. Dir., Clarence E. Ridley, 1313 E. 60th St., Chicago, Ill.

OCTOBER 9-12.—PROVIDENCE, R. I.
International Municipal Signal Association, Inc. (Providence-Biltmore Hotel.) Sec., Irvin Shulsinger, 7 E. 42d St., New York.

OCTOBER 9-13.—BOSTON, MASS.
National Recreation Association. Sec., Howard S. Braucher, 315 Fourth Ave., New York.

OCTOBER 11-13.—KANSAS CITY, MO.
American Water Works Association—Missouri Valley Section. (Hotel President.) Sec., Earl L. Waterman, Univ. of Iowa, Iowa City, Iowa.

OCTOBER 12-14.—FREMONT, NEBR.
League of Nebraska Municipalities. (Pathfinder Hotel.) Sec.-Treas., C. E. Beals, 204 Brownell Bldg., Lincoln, Nebr.

OCTOBER 14-17.—ATLANTIC CITY, N. J.
Institute of Traffic Engineers. (Ritz-Carlton Hotel.) Sec.-Treas., Harold F. Hammond, 90 John St., New York.

OCTOBER 16-19.—DALLAS, TEXAS.
American Water Works Association—Southwest Section. Sec.-Treas., Lewis A. Quigley, 3320 W. Berry St., Fort Worth, Texas.

OCTOBER 16-19.—SAN FRANCISCO, CALIF.
Municipal Finance Officers' Association of the United States and Canada. (Empire Hotel.) Exec. Dir., Carl H. Chatters, 1313 E. 60th St., Chicago, Ill.

OCTOBER 16-20.—CINCINNATI, OHIO.
National Association of Public School Business Officials. Sec., H. W. Cramblet, Board of Education, Pittsburgh, Pa.

OCTOBER 16-20.—ATLANTIC CITY, N. J.
National Safety Council. M'n'g Dir., W. H. Cameron, 20 N. Wacker Drive, Chicago, Ill.

OCTOBER 16-19.—SAN FRANCISCO, CALIF.
National Tax Association. (Palace Hotel.) Sec., W. G. Query, South Carolina Tax Commission, Columbia, S. C.

OCTOBER 17-20.—PITTSBURGH, PA.
American Public Health Association. (William Penn Hotel.) Exec. Sec., Dr. Reginald M. Atwater, 50 W. 50th St., New York.

OCTOBER 20-21.—ATLANTIC CITY, N. J.
American Water Works Association—New Jersey Section. (Claridge Hotel.) Sec.-Treas., H. N. Lendall, College of Engineering, Rutgers Univ., New Brunswick, N. J.

OCTOBER 22-25.—CHICAGO, ILL.
National Association of Commercial Organization Secretaries. (Edgewater Beach Hotel.) Asst. Sec.-Treas., Norma McKellops, 1615 H St., N. W., Washington, D. C.

OCTOBER 23-24.—PRATT, KANS.
Kansas Association of Municipal Utilities. (Roberts Hotel.) Sec.-Treas., L. C. Angevine, McPherson, Kans.

OCTOBER 25-28.—SAN FRANCISCO, CALIF.
American Water Works Association—California Section. (Fairmont Hotel.) Sec.-Treas., Carl M. Hoskinson, Div. of Water, Sacramento.

OCTOBER 25-26.—MILWAUKEE, WIS.
Wisconsin Chiefs of Police Association. (Hotel Pfister.) Sec., R. H. McCarty, Kaukauna, Wis.

OCTOBER 30-NOVEMBER 1.—OSHKOSH, WIS.
American Water Works Association—Wisconsin Section. (Raulf Hotel.) Sec., L. A. Smith, City Hall, Madison, Wis.

NOVEMBER.—INDIANAPOLIS, IND. (Date later.)
National Municipal League. Sec., Howard P. Jones, 309 E. 34th St., New York.

NOVEMBER 1-3.—CHICAGO, ILL.
The American Municipal Association. (Stevens Hotel.) Address: 1313 E. 60th St., Chicago, Ill.

NOVEMBER 6-8.—CHARLOTTE, N. C.
American Water Works Association—North Carolina Section. Sec., R. S. Phillips, 209 Dacian Ave., Durham, N. C.

NOVEMBER 22-24.—NEW ORLEANS, LA.
National Association of Housing Officials. Dir., Dr. Coleman Woodbury, 1313 E. 60th St., Chicago, Ill.

48" MONO-CAST CENTRIFUGAL PIPE

Center of interest at A. W. W. A. meeting at Atlantic City was this 48-in. B&S Cast Iron Pipe centrifugally cast in sand-lined refractory mold by the Mono-Cast method at Acipco. Length, 16 ft.; weight, 8100 lbs. Physicals 25,000 Tensile; 50,000 Modulus of Rupture. Tar-coated outside, and Enamelined inside. Bead cast on spigot end. Approximately 350,000 feet of Mono-Cast Centrifugal Pipe in 30 in. and 36 in. diameters are giving outstandingly satisfactory service in water and sewage disposal systems, gas transmission and distribution mains, etc., throughout the United States and in foreign countries. Acipco is now furnishing Mono-Cast Centrifugal Pipe in diameters from 3 in. to 48 in. inclusive. Write for literature.

AMERICAN CAST IRON PIPE COMPANY

BIRMINGHAM, ALABAMA

New York City Chicago Kansas City Minneapolis Dallas Los Angeles San Francisco
Pittsburgh Cleveland

SAVE — WEIGHT, COST AND UPKEEP OF AUXILIARY MOTOR

Operate Portable Equipment by Truck Motor *with*—

HERCULES

SPLIT-SHAFT

POWER TAKE-OFF

Operate air compressors—welders—light generators—blast fans, etc., direct from truck motor. No loss of power. No investment in auxiliary motors and trailers. Save on tires, gasoline, oil, anti-freeze and upkeep. Three types, three sizes each.

Air compressor operated through Hercules Take-Off.

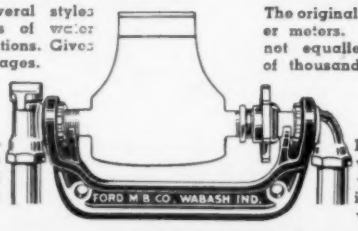
Learn how your city can save time and money — Write today.

HERCULES STEEL PRODUCTS CO.
GALION, OHIO, U. S. A.

The FORD YOKE

Made in several styles for all types of water meter installations. Gives many advantages.

The original Yoke for water meters. Imitated but not equalled. Hundreds of thousands in service.



Write for catalog of FORD YOKES and other meter equipment.

Let us tell you what FORD yokes will do in your water works.

THE FORD METER BOX CO.

WABASH, INDIANA, U. S. A.

Connery's TAR & ASPHALT HEATING KETTLES

Style "J" 60-75 gallon oil burning kettle equipped with Timken Bearings, solid rubber - tired wheels and truck springs. A fine kettle for maintenance work and the price is low.

All sizes manufactured from 10 to 550 gallons.

Send today for our complete catalog.

4000 North Second St. **Philadelphia, Pa.**

CONNERY CONSTRUCTION COMPANY

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

A Paved Invert Armco Pipe-Arch Installation for Storm-Water Drainage

New Storm-Water Pipe for Low Clearance

Announcement of a new corrugated metal product designed for drainage service in locations where there is low clearance or low headroom has been made by Armco Culvert Mfrs. Association, Middletown, Ohio. This new Armco Pipe-Arch has remarkable hydraulic efficiency, in addition to retaining the advantages of standard corrugated metal pipe, such as ease of handling, speed of installation, and strength to resist impact and undermining.

The top and bottom of the Pipe-Arch are factory-riveted into a single piece. The long sections may be fastened together with a standard coupling or connecting band of the same shape. Extensive dead-load and live-load tests show that this new pipe has strength closely comparable to that of standard corrugated pipe of equivalent span or diameter. The new product is available in spans ranging from 18 to 72 inches, with the rise being a little less than two-thirds the span. It is available in plain-galvanized or with a bituminous paved-invert.

The principal uses of the Armco Pipe-Arch are culverts under highways, railways and street intersections; storm and sanitary sewers; and conduits. Complete information on this new product may be obtained by writing to Armco Culvert Mfrs. Association, Middletown, Ohio, for the new announcement folder, "Have You Heard the Good News?"

New Yarning Material for Bell-and-Spigot Cast Iron Pipe

A rubber compound yarning material made in coils and in two cross-section shapes, tubular and wedge, has been announced and very well received by the water-works industry. This new yarning material, known as Flexo-Pac, was developed by Hayes R. Kuhns, Killbuck, Ohio, Midwest representative of The Leadite Co., Girard Trust Co. Building, Philadelphia, Pa. When this material is used for yarning a joint, it is not cut to exact lengths as with other materials, but is cut 2 inches long to insure a lap and tight dam. It is placed around the spigot by looping at the bottom the same as hemp, and then driven home with the yarning tool, starting at one end and proceeding around the pipe. Because of its elastic nature. Flexo-Pac takes up any variation in the centering of the pipe or when making a long-radius curve.

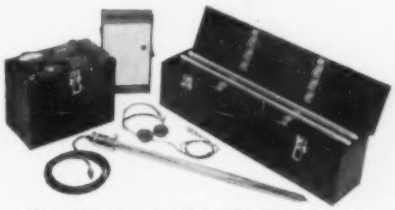
The wedge-shaped packing or Drawtype is placed with the narrow edge toward the back of the bell, while the round or tubular type is placed on the bottom of the pipe before entering the pipe in the bell, and as the spigot is entered into the bell the joint packing is stretched and drawn into the joint and then driven home tightly. If the joint packing is damp, it drives more easily.

The cost of this rubber yarning material is said to be little more than the best grade of hemp, and further, bacterial tests made at various state and private laboratories show that the rubber yarning material harbors no bacteria.

Full details may be secured from The Leadite Co. or from Hayes R. Kuhns, Killbuck, Ohio.

Buried-Pipe Locator Has Sectional Probe

A new device for detecting and locating leaks in water, oil, gas or other buried piping systems, has been announced by the Western Instrument Co., 5115 Kinsie



The Western Model 3VL Pipe Locator

St., Los Angeles, Calif. The Model 3 VL Locator consists of a sectional probe capable of reaching to any practical depth that may be dug with an earth auger or similar tools. There is a heavy-duty waterproof case containing batteries and detection instruments, earphones and other auxiliary items, weighing, ready for use, about 30 pounds.

The equipment may be operated by any man familiar with pipeline maintenance. Using the vibration differentiation method of testing pipelines for leaks, the vibration in the pipeline caused by gas, steam, air, oil, water, or other fluids escaping under pressure, is resolved into two components: one, the longitudinal, being parallel to the axis of the pipe; and the other, the transverse, being normal to the axis of the pipe.

Quantitative inspection of the effect of selective damping with respect to frequency and of the relation between the components, furnishes indications from which the source of the vibrations can be determined. These indications are integrated within the instrument itself. They show on the meter equal to, or below, a manually set reference hand.

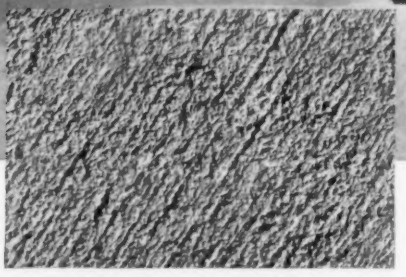
The self-contained batteries give from 250 to 300 hours intermittent service, and the tubes an approximate minimum of 1,000 hours service.

Pipe Joints Made Up with the Two Types of Kuhn's Rubber Yarning Material

Chicago, too

CUTS MAINTENANCE, PROMOTES SAFETY WITH CONCRETE

Franklin Street through Chicago's downtown wholesale district, designed to carry heavy truck traffic. The Merchandise Mart, world's largest building and magnet for industrial traffic, seen in background.



SURER TRACTION . . . Concrete's even, gritty-textured surface **(close-up shown)** gives tires a life-saving grip in wet weather or dry.

EASIER SEEING . . . Concrete's light color and high light reflection factor mean better lighting, greater safety.

6,500,000 SQ. YARDS SINCE 1930

In the past decade Chicago has ripped up a vast mileage of worn, rough streets and replaced them with concrete. With the State of Illinois, Cook County, and the City cooperating, concrete pavements have been built on every type of street—industrial and residential, as well as the finest boulevards.

Taxpayers, as a result, will save money for a long time to come. For cost records from many cities show that concrete streets cost very little for surface maintenance; only *one-half* to *one-seventh* as much as other types in typical cities reporting costs. Concrete *stays built* for long periods without costly resurfacing and rebuilding.

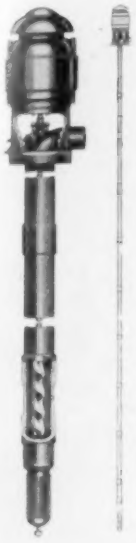
And safety has been promoted. Concrete plus modern roadway design has *definitely decreased accidents*—witness the remarkable safety record of one fatal accident per 40,000,000 vehicle-miles on Chicago's Outer Drive between Montrose and Foster Avenues.

Your community can profit as Chicago has from use of concrete.

PORTLAND CEMENT ASSOCIATION
Dept. A7-4, 33 West Grand Avenue, Chicago, Illinois
A National Organization to Improve and Extend the Uses of Concrete

The More Concrete Streets the Less Maintenance Expense

New Small Pump for Deep Wells



The New Peerless Hi-Lift Pump

A new pump which is claimed to be able to obtain the maximum capacity from small drilled deep wells from 3-inch diameter up, with lifts ranging from 40 feet to 1,000 feet and with small variation in capacity or pressure regardless of the height of lift, has been announced by the Peerless Pump Division, Food Machinery Corporation, Department 123, 301 West Avenue 26, Los Angeles, Calif. The simplified design, slow speed of operation at 1,760 rpm and unusual resistance to abrasion, make this Hi-Lift pump particularly suitable for small municipal installations, dairies, small farms, country estates, industrial establishments and homes.

This pump is neither a turbine nor a plunger pump, but combines the advantages of both in a compact unit which is easily installed. The capacities start at 5 gallons per minute and pressures in excess of 500 pounds are obtainable. The small hard chrome heat-treated stainless steel helical-contoured rotor moves at slow speed inside a cutless rubber stator, creating a positive pumping action. This little element will lift 50 gallons per minute 200 feet. Two elements will lift the same quantity per minute 500 feet.

Complete information regarding this pump will be found in Bulletin 142 which may be secured from Peerless Pump Division.

The Treatment Trailer Gets a New Skipper

After one year and one month's sojourn under the hot summer sun in Mexico, amid the winter ice and snow of Minnesota, and with varying weather conditions at all way-stations, Proportioneers' Treatment Trailer has been regroomed for its 1939 travels, reported Jeff Corydon, President, Proportioneers, Inc., 99 Codding Street, Providence, R. I., at the American Water Works Association convention at Atlantic City, where he welcomed many old friends at his booth and in the Trailer. Jeff Corydon said, with a tone of sadness in his voice, "I can't take it any more. Henry Armbrust is the 'trailer chaser' for this year." Armbrust took off from the A.W.W.A. convention for Canada for a several months' stay, to be followed by travel in New England and the North Atlantic States. Should it be found necessary to travel next winter, serious consideration will be given to mounting the trailer on skis.

Improved Water Softener Using Cold-Lime Process

A new, well-illustrated, 16-page bulletin on the Spaulding Precipitator used at Springfield, Ill., to provide a new method of softening water by the cold-lime treatment, has been prepared by The Permutit Co., 330 West 42nd Street, New York. This Bulletin No. 2204 contains diagrams showing the basic design of the Precipitator, diagrams showing how its construction can be fitted into rectangular tanks, a careful analysis of the advantages of the Precipitator and its operation, and complete specifications. Copies of this bulletin may be secured free from Permutit.

The New Littleford Traf-O-Line Marker

New Self-Propelled Traffic-Line Marker

A new traffic-line marker, the "Traf-O-Line," which is hand-controlled and guided, but self-propelled, has been announced by Littleford Bros., 500 East Pearl Street, Cincinnati, Ohio. It is designed to paint stripes with any kind of paint or lacquer as well as cut-back asphalt in widths from 2 to 8 inches at an all-day rate of 2 miles per hour.

A 5/8-hp Johnson engine, running all day on about 8 cents worth of gasoline, powers the machine, including self-propulsion as well as driving the paint pump. The guide runners or sleds oscillate, making it possible for one of them to hit a high spot, and the other to keep in touch with the road surface on a lower level, thus assuring a smooth mark even on rough pavements. The rear wheel is a caster that can be locked in place when doing straightaway line marking. When unlocked, plain and fancy marking, arrows, curves, figure eights, or any other desired stripes, can be handled.

The paint-can holds 7 gallons, making it possible for the operator to add a full 5-gallon can of paint to the marker while he still has a gallon or so in the machine. The bottom is concave so that all the paint flows down into the sump, making the outfit easy to clean. Paint is constantly circulated by the pump, which delivers approximately three times as much paint as can be applied through the nozzle. Surplus paint is by-passed back into the tank. This means the lines are always free, and when the discharge valve is shut off all the material by-passes back into the tank, which is important in handling any materials that have a tendency to settle when not kept in agitation.

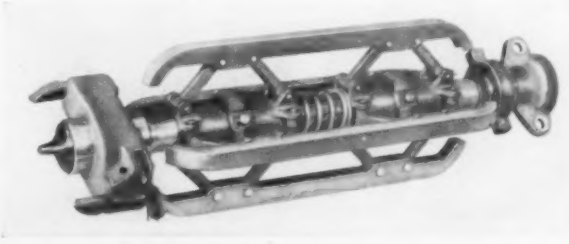
Sewer-Cleaning Machine Driven by Water Power

A sewer-cleaning unit which is pulled through the sewer by means of a cable and hand winch, and the cutting head of which is rotated rapidly on a simple balanced bearing by the pressure of water from a fire hose, is being made by Joseph G. Pollard Co., Inc., 142 Ashland Place, Brooklyn, N. Y. The cutting head has no hydraulic thrust, thus eliminating the need for an expensive anti-friction bearing. The knife is reported to cut roots, and even broom handles, without difficulty. Pivoted rotating brushes at the back of the cutter head are thrown against the sewer wall by centrifugal force to scour off encrusted materials and small roots which may be stretched so flat against the wall in the flushing stream as to escape the rotating knife.

The nozzles through which the escaping water performs its dual function of rotating the cutting head and creating a flushing action, are situated near the outer ends of the rotating arms.

The carriage for this machine holds the cutting head centered in the sewer, and when passing through irregular sewer sections the contact runners of the carriage yield to constrictions, at the same time centering the rotating head in the reduced space.

The Pollard sewer-cleaning machine is completely described and illustrated in a folder which will be sent free on request.



The New Pollard Sewer-Cleaning Machine

FACTS . . .

DUAL PARKING METER COMPANY places before city officials and other citizens *FACTS* regarding our product and THE DEVELOPMENT OF METERED PARKING.

Information has been disseminated regarding the Pittsburgh Testing Laboratory report on the Cleveland test stating that the meter selected passed the test. The Common Pleas Court of Cleveland held, on May 31, 1939, that the meter *failed to meet either specifications or tests.*

Speaking of that particular meter the court said: "It is as full of flaws as a dog is full of fleas." And further that there were "22 or 23 deviations" from the required specifications.

YEARS AHEAD . . . THE DUAL PARKING METER COMPANY and its products merit increasing confidence.

THE ORIGINAL CARL MAGEE METER

RECENT DUAL CONTRACTS INCLUDE . . .
Peekskill, N. Y., Weston, W. Va., Elwood, Ind., Granville, N. Y. Pekin, Ill., McKeesport, Pa., and Charlottesville, Va.

DUAL PARKING METER CO.

Commerce Exchange Building — Oklahoma City, Oklahoma

Keep your streets and parks free from waste and litter. Use

SOLAR Self-Closing Receptacles

Inviting, easy to empty. Made in a variety of sizes and colors for various uses.

SOLAR-STURGES MFG. CO.
Melrose Park, Ill.

EASY TO USE

EASY TO EMPTY

Write for Booklet and Prices

SALES ★ OPPORTUNITY

Vast increase in business requires a number of additional sales representatives for this revolutionary development. Outstanding merit, sensational low cost. Permanent demand . . . unequaled popularity . . . no competing products or services . . . most attractive commissions . . . full time not essential.

Know the municipal market? Here is a rare opportunity . . . Drop a line to:

Hunter Swimming Pools, Inc.
Architects Bldg., Indianapolis, Ind.

HOTEL PHILADELPHIAN
FORMERLY HOTEL PENNSYLVANIA

DANIEL CRAWFORD, Jr., Manager
39th and CHESTNUT STREETS
PHILADELPHIA, PENNA.

Our courteous and competent staff will give you the utmost in friendliness, comfort and service. Conveniently located to all stations, and only five minutes away from the heart of the business section.

600 ROOMS each with bath from $2.75 up

Lounge and Restaurants. Unrestricted Parking to 3 a.m.

Outstanding Exhibits at A.W.W.A. Convention

Among the outstanding exhibits of members of the Water Works Manufacturers' Association at the American Water Works Association convention last month in Atlantic City were several that presented products in unusual ways or dramatized certain features, uses or savings.

American Cast Iron Pipe Co., P. O. Box 2603, Birmingham, Ala., had probably what was the heaviest exhibit—a 16-foot length of 48-inch cast iron pipe, the first cast centrifugally.

The Dorr Co., 570 Lexington Avenue New York, showed several miniatures of Dorrco apparatus and a graphic presentation of the savings which have been made with Dorrco Flocculators in lime, alum, wash water and soda at Richmond, Va., New Brunswick, N. J., Old Hickory, Tenn., Louisville, Ky., and Topeka, Kans.

Homelite Corporation, 71 Riverdale Avenue, Port Chester, N. Y., showed a 2-inch self-priming Homelite centrifugal pumping from a trench with an inflow of ground water and five leaks in a T reducer. Accessories shown with this were a standard Homelite floodlight with a 250-watt lamp hooked up to a Homelite generator. Also, the new 1½-inch Homelite centrifugal was shown for the first time. This pump weighs 45 pounds against 79 for the 2-inch pump and has a completely automatic recirculation cut-off.

International Filter Co., 59 East Van Buren St., Chicago, Ill., showed an animated transparency of the Infilco Accelator for lime-softening plants, demonstrating the upward flow principle. With this also was shown a dry feed machine and an automatic sampler.

Johns-Manville Corporation, 292 Madison Avenue, New York, showed a Ford open car suspended by a ¾-inch corporation cock from a Class 150 pipe having a wall thickness of 0.69-inch. The car was swung off the axles and dramatically showed that corporation cocks will hold in this type of pipe. There was also a demonstration with a length of 8-inch pipe having a hole bored at mid-length and covered with a standard sleeve and the usual rubber rings to form a watertight joint. Pressure within the pipe was raised to 150 pounds, the standard for Class 150 pipe, and then to the field test pressure of 200 pounds, and then doubled, to demonstrate that the rubber rings hold under excessive pressures and do not blow out.

Keasbey & Mattison, Ambler, Pa., showed in sequence the "demons" which attack metal pipe, and their defeat by K. & M. Century asbestos cement pipe. These demons which K. & M. showed in cringing defeat included tuberculation, electrolysis and corrosion.

Pittsburgh Equitable Meter Co., 400 Lexington Avenue, Homewood, Pittsburgh, Pa., by means of a reflecting device showed the outside of an IMO meter and then the inside as it was operating. Another meter of the same type with the top registers removed so that the motion of the rotors could be seen from the top, was operated under varying small flows. The standard disc meters were also exhibited.

U. S. Pipe & Foundry Co., Burlington, N. J., showed a 3-foot section from a 60-inch cast iron pipe, and also an 18-foot length of 4-inch Class 150 Super de Lavaud pipe mounted as a beam with a 15-foot span supporting 4,650 pounds with a deflection of 3½ inches.

Other outstanding colorful, instructive and attractive exhibits were those of Farnan Brass Works Co., Foxboro Corp., The Barrett Co., Darco Corp., Central Foundry Co., The Permutit Co., Dresser Mfg. Co., The American Rolling Mill Co., Youngstown Sheet & Tube Co., R. D. Wood Co., Crane Co., and Calgon, Inc.

The innovation of a lounge in connection with the exhibits proved very popular, as did the free soft-drink service to delegates with badges.

The PDM All-Steel Grandstand for the Softball League at Lakewood, Ohio

Steel Bleachers for Softball Games

A new all-steel grandstand with a seating capacity of 1,800 has been erected recently for the Lakewood Elks Softball League at Lakewood, Ohio. The stand, built to accommodate the growing softball crowds, is constructed in standard sections so that it can be enlarged or even double-decked as necessary. The wood seat planks, supported on brackets, are securely bolted to the steel deck, and the seats can be conveniently reached from the aisles.

Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa., manufacturer, calls attention to the features of these grandstands, namely, their capability of being enlarged, dismantled and re-erected at a new location, and double-decked, yet always presenting a neat and finished appearance.

Austin-Western Plant and Executive Changes

Along with plans to erect additional buildings and to consolidate manufacturing facilities at Aurora, Ill., S. F. Beatty, President of the Austin-Western Road Machinery Co., has announced several executive changes designed to increase the efficiency and coordination of the entire organization.

F. L. Jerome, Vice-President, has been made Assistant to the President; H. M. Kleiser, Vice-President, has been placed in charge of Sales, Advertising, Service and Research; R. K. Stiles has been made Sales Manager; and A. O. Teckemeyer will become Manager of the Governmental Sales Division.

About 18 months ago Austin-Western changed from distributing its products through coast-to-coast branch office sales organizations, and now distributes its complete line of road-building, rock-crushing, earth-moving and street-cleaning machinery through a large number of well-known machinery equipment dealers, located throughout the United States and in all parts of the world.

Atwell to Handle Meter Sales in New England

The Pittsburgh Equitable Meter Co., Pittsburgh, Pa., has announced the appointment of Daniel J. Atwell to handle sales of Pittsburgh water meters in the New England territory. Mr. Atwell, who was with A. P. Smith Manufacturing Co. before joining Pittsburgh Equitable, has a wide acquaintance in the water-works industry. He will make his headquarters in Pittsburgh.

Shore Protection with Concrete

A new 32-page illustrated booklet, "Concrete Shore Protection," has been published by the Portland Cement Association, 33 West Grand Avenue, Chicago, Ill., discussing the erosion of shores and the causes, together with a lengthy discussion of wave action as to theory and effect, and then descriptions, illustrations and diagrams of several types of shore protection structures, including vertical-face sea-walls, curved-face sea-walls, stepped-face sea-walls, combination curved and stepped-face walls, light bulkhead walls, revetment, groins and jetties. Copies of this booklet may be secured free in the United States and Canada by writing to the Portland Cement Association and mentioning this item.

Counting Highway Traffic

The little hand counters that you have seen used to count people entering a hall, or a boat, have grown up. Now a convenient light-weight tabulator is available in units which will count from 1 to 60 different items. These Feathertouch Denominators, made by The Denominator Co., 261 Broadway, New York, are used extensively by highway traffic engineers to count and classify traffic at the same time accurately.

Removable classification slips behind the keys minimize errors. By simply pressing the key in front of the classification slips, one tally is added to the indicating figure above. The machine is made of metal throughout, except the composition plastic key tops. Wearing parts are of hardened steel. A reset knob at the left returns all counting units to zero.

New England Water Works Association Convention
Montreal, Quebec
September 12-15, 1939

CHEVROLET'S TRUCK LINE is a Fleet in Itself

Choose from its 47 models, on nine wheelbases, the truck best suited to your needs

The wide margin by which Chevrolet leads all other makes of motor trucks in *sales* is also a direct measure of Chevrolet's leadership in *value*—for trucks are bought by business men who are intent, first of all, on getting the best return on their investment. More and more, they are finding that Chevrolet trucks *pay*—in economy, efficiency and durability. . . . This year, to a greater extent than ever before, Chevrolet's wide variety of trucks—47 models, nine wheelbases—makes the advantages of Chevrolet transportation available to the great majority of business and industrial uses. This variety of models, and their versatility that fits them to so wide a range of uses, also account for a large part of Chevrolet's predominant sales leadership.

CHECK—AND TRIPLE-CHECK
—CHEVROLET TRUCKS FOR

Value
Variety
Versatility

CHEVROLET MOTOR DIVISION, *General Motors Sales Corporation*, DETROIT, MICHIGAN
General Motors Instalment Plan—convenient, economical monthly payments. A General Motors Value.

DESIGNED FOR THE LOAD — CHEVROLET — POWERED FOR THE PULL

MASSIVE NEW SUPREMLINE TRUCK STYLING . . . COUPE-TYPE CABS . . . VASTLY IMPROVED VISIBILITY • FAMOUS VALVE-IN-HEAD TRUCK ENGINE • POWERFUL HYDRAULIC TRUCK BRAKES (Vacuum-Power Brake Equipment optional on Heavy Duty models at additional cost) • FULL-FLOATING REAR AXLE on Heavy Duty models only (2-Speed Axle optional on Heavy Duty models at additional cost)

During July we hope you will remember to mention THE AMERICAN CITY.

New Device Adds Flows of Separate Meter Units

The ability to add the flow of two or more metering devices so that the sum of the individual meters can be transmitted to a master meter, or be used as a function of control, is becoming an increasingly important factor in water- and sewage-plant operation. Since totalization of flow rates, however, must be obtained with the closest accuracy, the summating device must be simple in design, sensitive to the slightest changes in flow rates through the individual meters, capable of easy and quick checking, and so constructed that a minimum of operating maintenance is required.

Simplex Valve & Meter Co., 6789 Upland Street, Philadelphia, Pa., has designed the Simplex Summator to meet these requirements. It consists of displacement units operated through an outside source of power by each of the metering instruments in the summation system. Through a power amplifier unit actuated directly by the meter float, the displacer is moved in its well a distance that is directly proportional to the meter rate. Individual displacers are connected by means of pressure piping to the master unit, wherein the total displacement of all units is used to position the summating meter or control.

The Simplex Summator has been used to add the flows of from two to twelve instruments with the summated flow operating chlorinators, dry feeders, and proportional controls. A complete description of the Simplex Summator will be found in Bulletin No. 70 which Simplex will send free on request.

Huge Elevated Tank Shipped on Single Barge

The shipping of an entire 1,000,000-gallon Toroidal bottom elevated steel tank by water from Pittsburgh, Pa., to Owensboro, Ky., in a single barge-load, was recently accomplished by Pittsburgh-Des Moines Steel Co., of Pittsburgh, and the American Barge Lines. This tank, the equivalent of 13 carloads of steel, in its semi-fabricated state weighed 400 tons. By carefully loading it section by section onto the large barge, the tank was transported without difficulty down the Ohio River to its destination, where a Pittsburgh-Des Moines erection crew awaited it.

This is believed to be the first time so large a tank has been transported by water in a single barge shipment. The illustration shows the partially loaded barge at Pittsburgh, with the arrangement of the tank sections on the deck.

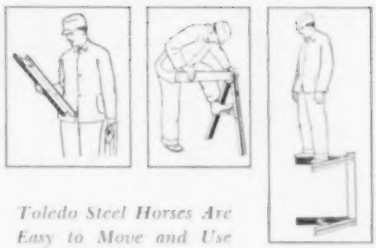
A Semi-Fabricated Pittsburgh-Des Moines 1,000,000-Gallon Steel Tank Loaded for Shipment by Barge

Blower Corp. Moves Chicago Office

The Roots-Connersville Blower Corporation, Connersville, Ind., has announced the removal of its Chicago office from Room 814, at 140 South Dearborn Street, to Room 1027, in the People's Gas Building, 122 South Michigan Avenue. William Townsend remains as District Manager, with James T. Sutliff, Sales Engineer, who will continue to handle the sale of the company's products in the Chicago district. This company manufactures blowers and gas pumps of the rotary displacement and centrifugal types, rotary positive meters, liquid and vacuum pumps, inert gas generators, etc.

Folding Steel Horses for City Departments

A wide variety of folding steel horses in eight height ranges is made by The Toledo Pressed Steel Co., Toledo, Ohio, for 2-inch rail material or 1¼-inch pipe, with four of the horses for 1-inch rail material and three for 8-inch material flatwise. These folding steel horses are easily knocked down and take up very little room in storage or for transportation. When opened, the jaws grip the rail, insuring rigidity and preventing splitting. They are used as barricades, construction trestles and saw-horses about construction work, and have an even broader usefulness about a city yard or shop.



Toledo Steel Horses Are Easy to Move and Use

New Copper and Brass Pipe and Tube Catalog

Revere Copper & Brass, Inc., 230 Park Avenue, New York, has recently issued a new 20-page catalog on Revere copper and brass pipe and tubing. This brochure is effectively illustrated, showing the advantages of copper water tube and its many applications.

Tables of dimensions of brass and copper pipe are given, together with installation data and suggested specifications. Copies may be secured free on request by readers of THE AMERICAN CITY mentioning this item.

You can't get rid of
SLIMY SAM SEWER SLUDGE
with a shovel—

You gotta have an OK Champion Sewer Cleaner to clean out your sewer mains.

The hand models will get him positively, but the power machines will do it faster. You don't want to send men down to spend all day in the sewer when it isn't necessary. You can't endanger the health of your citizens by dirty sewers when the remedy is so easy. Your expensive sewage disposal plant can't do its best work when sewers are dirty and costly damage to the plant happens regularly with dirty sewers.

Many years of rains washing down street dirt, cinders, bricks, etc., eventually fill up any sewer. Finally comes the day of flooded basements, damage suits and hurry-up, unsatisfactory, emergency, temporary cleaning.

New York City, Atlantic City, Flint, Little Rock, Bay City, Duluth, Westfield, Jersey City, Akron, Midland, Gary and hundreds of other cities keep their sewers at full efficiency by routine machine cleaning with OK Champion equipment. The cost is very low.

Why not get your copy of OK Champion literature, now ready for you?

CHAMPION CORPORATION
4716 Sheffield Ave., Hammond, Ind.

80 TIMES AROUND THE WORLD

Below you see four Ford units with a combined mileage of more than 2,000,000 miles—about 80 times the distance around the world.

1936 112-inch Ford V-8 Panel, purchased in November, 1935, by Joy V. Thrash of Emporia, Kansas. Mileage now exceeds 508,000.

1935 131½-inch Ford V-8 Dump Truck with special body and trailing axle, owned by S. H. Bacon Co. of Los Angeles, California. More than 400,000 miles.

1934 Ford V-8 Tractor owned by C. E. Rimmer of Lodi, California. This truck is on the job 20 hours a day and has run over 600,000 miles.

HERE is proof of spectacular truck performance. Not many trucks could do what these have done. Yet few Ford Truck owners will be surprised—even at this astonishing record. The man who owns or drives a Ford knows, better than any one, that for stamina and dependability it stands alone.

The units you see here, like all Ford Trucks and Commercial Cars, were built to the highest standards of quality in design, materials and workmanship. That, with the Ford Engine and Parts Exchange Plan, is the reason they were able to achieve their remarkable service record.

1939 Ford Trucks and Commercial Cars are better built than ever to give reliable, low-cost service over thousands of miles in every hauling and delivery field. There are 3 V-8 engines, 6 wheelbases, 42 body and chassis types (including cab-over-engine models) to choose from. See any Ford dealer for an "on-the-job" test.

1934 131½-inch Ford V-8 Tractor owned by Petroleum Carrier Corporation of Jacksonville, Florida. 626,000 miles and still going strong.

Ford Motor Company, builders of Ford V-8 and Mercury Cars, Ford Trucks, Commercial Cars, Station Wagons and Transit Buses.

FORD V-8 TRUCKS AND COMMERCIAL CARS

John E. Jackson

Pittsburgh-Des Moines Company Elections

On June 5, 1939, John Edward Jackson was elected President of the Pittsburgh-Des Moines Co., Pittsburgh, Pa., to succeed his father, who died April 26. The new President was graduated in civil engineering from Iowa State College in 1924 and since his graduation has been actively connected with various departments of the Pittsburgh-Des Moines Co. and its affiliate, the Pittsburgh-Des Moines Steel Co. He was Manager of the Incinerator Department for a number of years, and since 1935 has been General Manager of the Construction Department.

Under his supervision many jobs of magnitude have been built, including the large wind tunnel for N.A.C.A. at Langley Field, Va., the high-pressure wind tunnel for Massachusetts Institute of Technology, hangars for the U. S. Army at Albrook Field, Canal Zone, and for the U. S. Navy at Coco Solo, Canal Zone. In addition, he has directed the construction of numerous municipal water-works systems and incinerators in various parts of the country.

William R. Jackson was elected a Director of the Pittsburgh-Des Moines Co. and also Assistant Secretary and Treasurer. Other officers of the company are A. C. Pearsall, Vice-President; J. E. O'Leary, Vice-President and General Sales Manager; H. W. Ford, Vice-President; and George A. Smith, Secretary and Treasurer.

News from Okonite Co.

The Okonite Co., Passaic, N. J., manufacturer of insulated cables, wires and tapes, has announced the election of Charles M. Kirkland as Secretary of the company and also of the Okonite-Callender Cable Co., of Paterson, N. J. Mr. Kirkland has worked in all three of the Okonite plants since his graduation from Harvard, spending most of his time in development and research work in the four Okonite laboratories. He was transferred to New York early in 1939, and now has his office in the Okonite Co. at 501 Fifth Avenue, New York.

An additional district office has been established in the National Building, 1404 East 9th Street, Cleveland, Ohio, in charge of F. J. Dahleiden, who was previously one of the company's sales engineers in the Chicago territory.

New Engineering Manager of Westinghouse Lighting

The appointment of I. A. Yost as Manager of Engineering of the Lighting Division of the Westinghouse Electric & Mfg. Co. was announced recently. He will have his headquarters at Edgewater Park, Cleveland, Ohio.

After graduation from Pennsylvania State College in 1924, Mr. Yost completed the student course with Westinghouse and was assigned to the Illumination Engineering Section at East Pittsburgh, and two years later was transferred to the Lighting Division, then located at South Bend. In 1929 he became Division Engineer in Charge of Floodlighting and Airport Lighting.

He moved to Cleveland in 1930, when the Lighting Division was transferred there, and in 1938 was placed in charge of engineering concerned with the commercial development of electrostatic air cleaners. In recent years he has been Assistant Manager of Engineering of the Lighting Division and has contributed much to the lighting effects exhibited at the Century of Progress in Chicago, the Great Lakes Exposition in Cleveland, and the New York World's Fair, 1939.

Asphalt Construction Bulletins Available

A new series of bulletins on asphalt construction and maintenance equipment has recently been made available by Littleford Brothers, 451 East Pearl Street, Cincinnati, Ohio, as follows:

Bulletin 0-15 describes the Littleford Model M pressure distributor made in tank capacities from 500 to 1,000 gallons.

A new bulletin on the Model No. 101 utility spray tank shows how three units are combined in this one piece of equipment, a hand spray unit, a draw-off unit, and a spray bar unit.

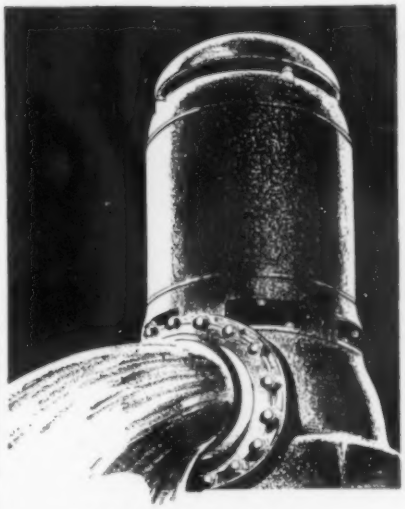
The No. 84-HD kettle is the subject of a piece of literature which illustrates the special features of this piece of equipment, including double heat circulation, screen reservoir, a motor-driven spray and an oil burner heater.

The Model C distributor with three types of spray bars to choose from, the full circulating spray bar, a standard spray bar and a side nozzle spray bar, together with a continuous heat flue system using a low-pressure burner and the single-valve control, are featured in a special folder.

The Model 150 motorized wheeled roller which trails at any speed, is self-operated on the job and designed particularly for patches, is featured in a particularly well-illustrated folder.

The Littleford all-steel "Hand-Dee Box" for tools, which is equipped with a safety catch and a safety cover lock and can be used either as a portable unit or as a stationary tool-box, is described in a two-color folder effectively.

Any or all of these bulletins will be sent free on request to readers of THE AMERICAN CITY.



Check these
exclusive
Peerless Features

1. DOUBLE BOWL BEARINGS
Peerless is the only pump with double bowl bearings. Every bowl has a bronze and rubber bearing, perfectly water-lubricated. Add life, deter sand-cutting.

2. DOUBLE SEALED BOWLS
Peerless is the only pump with fully enclosed, adjustable impellers, conventionally sealed at sides, with an *additional* seal of cutless rubber at the bottom of impeller. Always a perfect fit.

3. SPECIAL STAINLESS STEEL SHAFT
The impeller pump shaft is highest grade stainless steel, made to exclusive Peerless specifications, with the line shaft of precision steel, turned, ground and polished, assuring perfect alignment. No vibration.

4. INTRA-COOLED BEARINGS
Instead of placing the thrust bearing at the top of the motor, Peerless design places this important bearing at the base of the pump head, the most rigid point, constantly cooled by the surrounding flow of water.

Many other exclusive Peerless features of extreme importance for the production of water for municipal service, are offered, too. Our new Catalog, just off the press, gives full details. May we send you a copy?

Factories:
LOS ANGELES, CALIF., SAN JOSE, CALIF.
FRESNO, CALIF. • MASSILLON, OHIO

★ WATER OR OIL LUBRICATION
Peerless
TURBINE PUMPS
PERFORMANCE WITH ECONOMY
Peerless Pump Division
Food Machinery Corporation

Three-year Maintenance Costs at Richmond, Va.

MAINTENANCE EXPENSE OF PRINCIPAL TYPES OF STREET PAVEMENTS IN RICHMOND, VIRGINIA

From Annual Reports of the Director of Public Works for 1936, 1937 and 1938

Item	Year	Vitrified Brick	Type A	Type B	Type C	Type D
Total Square Yards	1936	282,726	1,237,256	72,137	180,984	42,446
	1937	291,285	1,255,413	72,137	182,413	42,446
	1938	308,166	1,321,786	72,137	195,754	43,225
Square Yards Replaced	1936		16	2	3,951	0
	1937		6	60	1,365	55
	1938		9	72	1,147	32
Total Maintenance Cost	1936	$23.47	33,487	$40,505.67	$4.46	$8,383.54	0
	1937	19.13	5,650	15,298.38	272.87	4,358.80	$258.83
	1938	28.89	6,201	16,028.04	310.88	3,969.65	144.89
Unit Maintenance Cost Per Square Yard	1936	$0.000083		$0.033	$0.000062	$0.046	0
	1937	0.000066		0.012	0.0038	0.024	$0.0061
	1938	0.000094		0.012	0.0044	0.0203	0.0034
Maintenance Cost Per Square Yard	3 Year Ave.	$0.000081*		$0.019	$0.0027	$0.030	$0.0032
Comparative Index	3 Year Ave.	1		247	33	370	40

NOTE—*Surface Courses on Concrete Bases.*
*"Maintenance due to causes other than the failure of the Vitrified Brick."

"BOX-CAR DECIMALS" *used to give square yard maintenance cost of Brick.*

Photo is South 2nd Street, Richmond, Va.

CASE HISTORIES are always interesting. They are devoid of generalities. And the 3-year case history of maintenance costs of various pavement types at Richmond, Va. is especially so.

Other pavement types were found to cost from 33 to 370 times as much per square yard to maintain as brick.

Look at that "box-car" decimal that is used to give a unit maintenance cost for brick—four ciphers between the decimal point and the first figure!

But this is only a portion of brick's amazing economy. Its useful life goes on and on—often 35 years, sometimes 50 years or more. In recent years more improvements have been made in the manufacture and construction technique of brick pavements than in all of the centuries of its use.

Engineers can simplify their work—make startling reductions in "pavement cost per year" by resurfacing failing pavements with brick and protecting new construction with a modern brick surface.

For further information, write National Paving Brick Association, National Press Building, Washington, D. C.

BRICK

FOR NEW AND RESURFACE JOBS

When you write for that catalog, kindly mention THE AMERICAN CITY.

NEW INDIAN MOTORCYCLES FOR THE POUGHKEEPSIE, N. Y., POLICE DEPARTMENT

Standing in back are Chief George Leadbitter of Poughkeepsie in the center, flanked by Jimmie Wright and Hal Marindin, Sales Director and Assistant Sales Manager, respectively, of Indian Motocycle Co.

New Strainer Head for Filters and Softeners

A new strainer head for underdrain systems in filters and water softeners has recently been announced by The Permutit Co., 330 W. 42nd St., New York. This expansible strainer head has the faculty of providing a small opening during the lower rates of filtering or down-flow, and a large opening during the higher rates of up-flow when washing the filter. The strainer head is of cast bronze and rolled brass construction, and the action of the port is controlled by a flapper plate which is free to move vertically between the machined surface of the strainer base and the underside of the umbrella hood.

Since the strainer base is provided with a ¾-inch shank, which is larger than that formerly used, and since the umbrella hood provides sufficient weir edge evenly to distribute the backwash water over a wider area, the bronze base of the strainer is screwed into the laterals and 12-inch centers. Where desired, these strainers can also be supplied with a hard-rubber insulating cylinder, vulcanized to the outside of the unthreaded shank. This cylinder is threaded on the outside to fit 1-inch tapped openings in the laterals. Thus the need for separate insulating bushings to prevent electrolysis where iron laterals are employed is eliminated.

When filtered water passes down through the strainer, the flapper plate drops against the machine surface of the fitting and constricts the port to a narrow circular slot between the periphery of the flapper plate and the base. During backwashing when the water rises rapidly upward, the flapper plate is lifted by the water pressure, and the port is opened. This strainer head is non-clogging, as any sand grain or any other solid matter which might work itself into the port during downflow is released and washed clear during backwashing when the flapper plate is lifted.

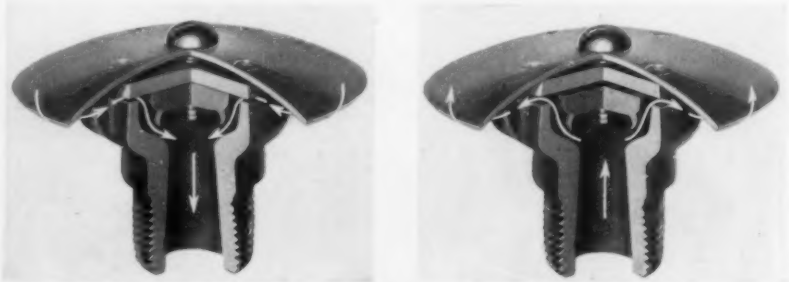
New President Elected for Nichols Corporation

C. W. Nichols, Sr., has been elected President of the Nichols Engineering and Research Corporation, 60 Wall Tower, New York, manufacturers of Nichols-Herreshoff sewage-sludge incinerators and Nichols-Decarie refuse incinerators. Mr. Nichols succeeds H. J. Hartley, who resigned recently.

Infilco Moves General Offices

On June 2 the administrative and sales offices of International Filter Co. were moved from the Loop District of Chicago to the company's factory at 325 West 25th Place, Chicago, Ill. P. N. Engel, President, states that this move is made to coordinate the work of the administrative, sales, engineering and production departments more effectively.

The manufacturing operations are confined now to the first floor of the main plant building and to a new structure erected during the past year. The engineering, service, development, production and purchasing departments are located on the second floor. The third floor has been completely remodeled to accommodate the executive offices and the sales, advertising, accounting, laboratory, stenographic, file and mail departments.



The New Permutit Filter Underdrain Strainer Shown at the Left During Filtering, and at the Right During Backwashing

South Bend
31 YEARS EXPERIENCE
STREET FLUSHERS
•
STREET SPRINKLERS
•
GUTTER SNIPE
Pickup Sweepers
•
BITUMINOUS MATERIAL DISTRIBUTORS
•
MAINTENANCE UNITS
For Bituminous Surfaces
•
TRAFFIC LINE MARKERS
•
MUNICIPAL SUPPLY COMPANY
SOUTH BEND, IND.

15 of the 22 Harley-Davidson Police Motorcycles used by Providence, R. I., Exclusively.

PROVIDENCE, R.I. — 1938 Grand Prize-Winning City USES 22 HARLEY-DAVIDSONS EXCLUSIVELY!

PROVIDENCE, R. I.—awarded the Grand Prize in the 1938 National Traffic Safety Contest—certainly accomplished some remarkable feats! Throughout the entire year, Providence came nearest to doing the maximum that could be done practicably for traffic safety. It astonished the nation by going 111 days without a single traffic fatality, reduced traffic deaths 60% below 1937, and held its death rate down to less than half of the national average. Such a record deserves highest commendation!

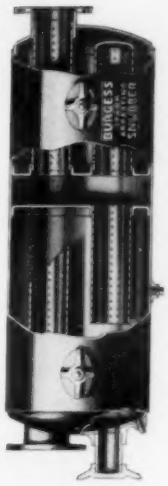
It is significant that Providence uses Harley-Davidson Police Motorcycles exclusively. Equip your squads for greatest efficiency—get Harley-Davidsons' greater power and stamina — service-proved dependability —ease of handling — low-cost operation and maintenance. Phone your Harley-Davidson dealer today to bring over a 1939 model for your inspection.

HARLEY-DAVIDSON MOTOR CO.
DEPARTMENT M MILWAUKEE, WIS.

✓ Check THIS FEATURE

Harley-Davidson Police Motorcycle Frames are world-renowned for their ability to withstand severe punishment. Reinforced, double-loop, trussed, made from seamless alloy steel tubing with all major fittings drop forged. Entire frame is heat-treated for great strength. Low center of gravity assures ease of handling.

HARLEY-DAVIDSON
THE POLICE MOTORCYCLE



Burgess SDHS Series Spark Arresting Snubber

A New Spark Arrester for Diesel Exhausts

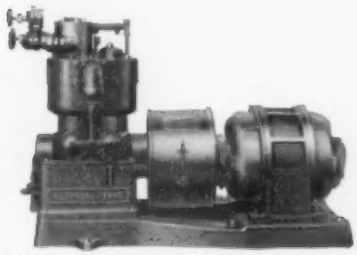
In many locations the flying sparks from the exhausts of diesel engines are troublesome and hazardous. To trap these, the Burgess Battery Co., Acoustic Division, 500 West Huron Street, Chicago, Ill., has developed a new spark-arresting type of exhaust snubber. Like all Burgess exhaust snubbers, this new Model SDHS retards the slugs of high-velocity exhaust gas which rush into the exhaust pipe and bleeds them to low pressure before any noise can be created. Thus, the snubber prevents the building-up of line surges and peak back pressures which cause high fuel consumption.

Two methods of spark removal are utilized in this design. Because of the large cross-sectional path, the velocity of the gases is very low, and the heavier particles tend to separate out by gravity. Further, the exhaust gases change direction and velocity so that the remaining finer carbon particles are thrown out owing to centrifugal action. The carbon and ash drop into a large chamber in the bottom of the snubber, which is set up vertically, where they can be removed through a hand hole.

This snubber does not require tuning and can be installed anywhere in the exhaust pipe system, and it ought to operate equally well with any kind of engine as long as it is installed vertically as indicated in the illustration.

Air Compressors Made for Starting Diesels

High-pressure compressors designed particularly for furnishing air for starting internal-combustion engines, particularly diesels, are described in Folder 2437 which has recently been issued by Ingersoll-Rand Co., 11 Broadway, New York. These Type 20 vertical, stationary, two-stage compressors are built in four sizes ranging from 7½ to 20 hp at discharge pressures of 300 to 400 pounds on heavy-duty service, and



The New I-R Two-Stage Air Compressor for Starting Diesels

up to 1,000 pounds on intermittent starting service. They are available in a variety of drives, which include direct connection to electric motors, gasoline or oil engines, and flat or V belts, suitable for practically all types of installations.

The compressor is water-cooled, automatically lubricated, and is said to require a minimum of attention. Copies of the description sheet are available by writing to the manufacturer and mentioning this item.

A No. 302 Adams Motor Grader Powered by an International I-30 Tractor Working on an Unimproved Street in Speedway City, a Suburb of Indianapolis, Ind.

SAF-T-EYE

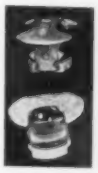
Knowledge Is Safety

If we know the danger, we know how to be safe—at least as safe as possible under the circumstances. Night driving is more hazardous than day driving, because we have less knowledge of the road.

Provide the night driver with more information, and the night accident rate will rapidly decrease.

USE SAF-T-EYE

Products for Night Driving Safety



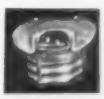
1. Box dangerous intersections with SAF-T-EYE road markers.

2. Mark railroad crossings with an "X" in the lane of traffic.

3. Mark center line of road where foggy conditions prevail and where dangerous curves exist.

4. Mark islands with curb markers and also mark curbs in the same manner through parkways, etc.

5. Use permanent opal glass street markers for parking lanes and pedestrian crossings.



6. The SAF-T-EYE road marker is also made in a style that is replaceable, if preference dictates such type. This replaceable style can be removed and a cap inserted.

7. For one-way streets or roadways where reflection is required in one direction only, we have the SAF-T-EYE city traffic marker. This marker is also of value in marking pedestrian crossings.

8. For safety zones, such as street car safety islands, use SAF-T-EYE Saf-T-Zone marker.

9. Use light reflecting intersection markers as a warning and to prevent cutting corners.

SAF-T-EYE CO., INC.
c/o The Phoenix Glass Co.
Monaca, Pa.

Gentlemen:

Kindly send additional information with reference to

No. 1 ☐ No. 2 ☐ No. 3 ☐
No. 4 ☐ No. 5 ☐ No. 6 ☐
No. 7 ☐ No. 8 ☐ No. 9 ☐

Name .....

Address .....

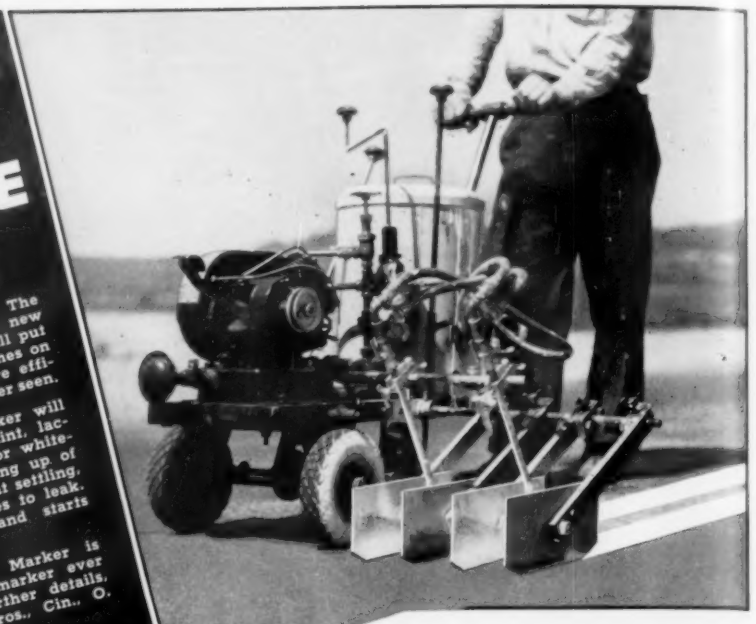
City .....

Announcing the New TRAF-O-LINE MARKER

Here's the newest of Line Markers! The Littleford Traf-O-Line Marker. It's new in principle, costs less to operate, will put down single or double razor edge lines on any surface faster, easier, and more efficient than any marker you have ever seen.

The Traf-O-Line Marker will handle any kind of paint, lacquer, cutback asphalt or white-wash. No more clogging up of the lines, no more paint settling, no more pressure lines to leak. One control stops and starts spray instantly.

This Traf-O-Line Marker is the most modern marker ever developed. For further details, write Littleford Bros., Cin., O.



NEW IN PRINCIPLE

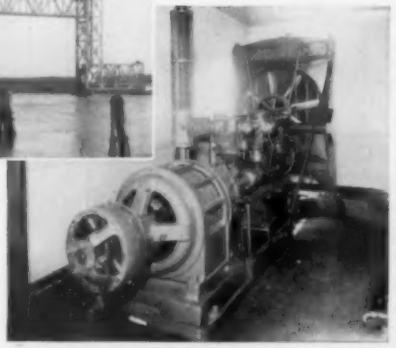
LOW IN PRICE

BLACK TOP ROAD MAINTENANCE EQUIPMENT — LB — SINCE 1900

LITTLEFORD

LITTLEFORD BROS.
500 E. Pearl St., Cincinnati, Ohio

THE GOLDEN GATE BRIDGE—SAN FRANCISCO
TRIBOROUGH BRIDGE—NEW YORK
WELLAND CANAL BRIDGES—20—CANADA



Cape Cod Canal Bridge at Buzzards Bay, Massachusetts, project of U. S. Engineers, is equipped with 125-K.W. 1200-R.P.M. generator, driven by Sterling Dolphin C 8-cylinder gasoline engine.

The Pennsylvania Railroad Bridges; C. R. R. of N. J. Bridge; the D. L. & W. R. R. Bridges at Newark; the New York State Bridges at Albany—most all of the prominent bridges in the past 20 years—have Sterling Engines, either for primary power or emergency.

STERLING HIGH DUTY — Sterling — INTERNAL COMBUSTION ENGINES

The accumulated data, covering all details required for a successful installation—yours on request.

STERLING ENGINE COMPANY

Home Office and Plant
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Dept. C-11

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900 Chrysler Bldg.
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Reed and Baker Return to Consulting Practice

Howard S. Reed and Sheldon K. Baker have returned to the general practice of engineering with offices at the Heard Building, Phoenix, Ariz. Their engineering offices were suspended during Mr. Baker's service with the National Resources Committee and while Mr. Reed was State Director, Public Works Administration, and then State Highway Engineer. These associates engage in municipal work, hydraulics, irrigation, planning and appraisals.

Flushing the Streets of New York World's Fair

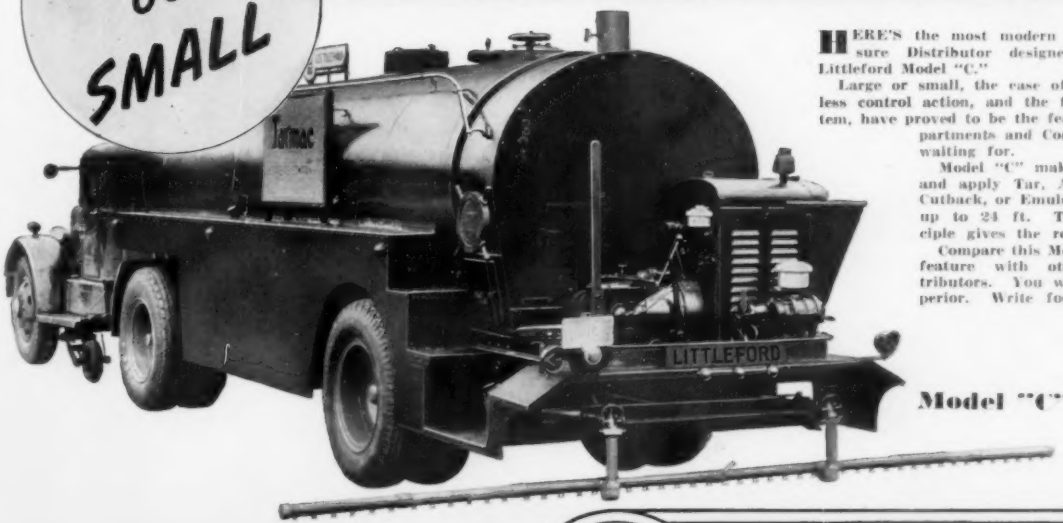
The vastness of the New York World's Fair of 1939 has already impressed millions, and the wonder of its exhibits has inspired awe. The order and cleanliness of the grounds has also been noted by many. To insure the removal of all dust from pavements, a new streamlined model EHU Mack truck equipped with a 1,000-gallon Etnyre flusher is used for washing the Fair streets. This unit was purchased by the New York World's Fair, 1939, corporation and was specifically designed for this job. The standard Etnyre flusher uses a separate engine located in a compartment at the rear. Two nozzles located at the front of the unit and two mounted under the tank allow a liberal distribution of water for a thorough street-cleaning job. Any one of the four nozzles may also be run independently.

A Mack-Etnyre Power Flusher Used by the New York World's Fair 1939 *Corporation for Cleaning Streets in the "World of Tomorrow"*

The cab-over-engine truck, made by Mack Trucks, Inc., Long Island City, New York, is easily maneuverable and can turn in a minimum of space. This outfit is doing its part in making the "World of Tomorrow" a Spotless Town.

LARGE or SMALL

THEY OPERATE EFFICIENTLY



HERE'S the most modern and efficient Pressure Distributor designed today—it's the Littleford Model "C."

Large or small, the ease of operation, gadgetless control action, and the fastest heating system, have proved to be the features Highway Departments and Contractors have been waiting for.

Model "C" makes it easy to heat and apply Tar, Asphalt, Road Oils, Cutback, or Emulsions, on spray bars up to 24 ft. The suck-back principle gives the real no-drip action.

Compare this Model "C" feature for feature with other Pressure Distributors. You will see why it's superior. Write for details.

Model "C"

Above Model "C" Pressure Distributor is a 3000 gallon capacity, Semi-Trailer Unit, with 24 ft. Suck Back Spray Bar

BLACK TOP ROAD MAINTENANCE EQUIPMENT LB SINCE - 1900

LITTLEFORD

LITTLEFORD BROS.
500 E. Pearl St., Cincinnati, Ohio

A Salute to 34 MID-WEST CITIES

. . . who have provided additional safety and convenience for their citizens by the installation of modern street lighting.

MICHIGAN
Benton Harbor
St. Joseph
Detroit

INDIANA
Portland
Indianapolis
Covington
Elkhart
Richmond
Terre Haute

ILLINOIS
Decatur
Lockport
Dixon
Naperville
Peoria

MISSOURI
Kirkwood
Hannibal

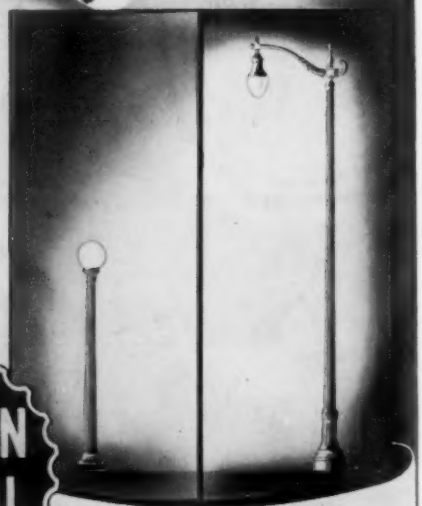
IOWA
Fort Dodge
Orange City
Des Moines

MINNESOTA
Rochester
Austin
St. Paul
New Ulm

WISCONSIN
De Pere
Oshkosh
Greenfield
LaCrosse
Lake Geneva
Prairie Du Sac
West Allis

KANSAS
Hutchinson
Eureka
Salina
Chetopa
Sterling

Union Metal *steel* standards were used in each of these installations to insure proper mounting heights, dependable support and low-cost maintenance.



UNION METAL

Old Style • New Style

Modern, streamlined Union Metal standards place luminaries higher up—farther out over the street—increasing visibility and safety.

THE UNION METAL MANUFACTURING CO. CANTON OHIO

During July we hope you will remember to mention THE AMERICAN CITY.

Outdoor Lighting

A Section of The American City
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks and the Floodlighting of Public Buildings

The Science of Safety Lighting

By R. L. Biesele, Jr.
Application Engineer,
Westinghouse Electric & Mfg. Co.
Lighting Division, Cleveland, Ohio

For traffic safety after dark a safety lighting system must provide practical visibility at distances required by modern speeds. The most economical and effective method is to produce a high, uniform brightness on the surface, against which most objects will stand out as silhouettes.

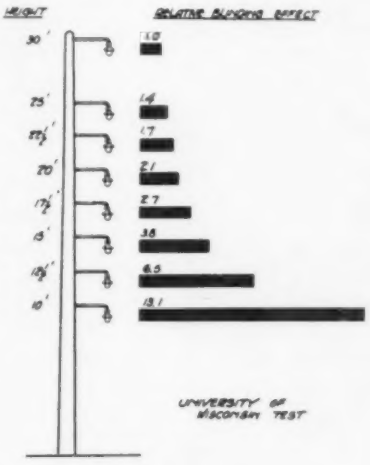
This can easily be obtained on a light, dry road surface, but is much more difficult to produce on a wet or polished road surface. The effect of a lighting unit suspended over a surface of this latter type is like the effect of the moon over a body of water. There is a streak of reflected light from the surface in a path directly between the eye and the source. Light strikes the surface outside the streak, but since it is not directed toward the eye, the area outside the streak appears dark.

In order to produce a bright pavement surface in front of the car on a specular surface of this type, it is necessary that the lighting unit be located directly in front of the car, so that the streak of specular reflection lies on the portion of the street toward which the car is traveling.

Suspended Out Over the Roadway

To achieve this, the luminaires must be suspended out over the roadway (the best arrangement, but usually impractical, would be a row of luminaires over each traffic lane), and located at the outside of sharp curves. No other measures can effectively compensate for improper location of the luminaires.

All pavements when wet are predominantly specular, and when dry contain an element of specularity. Therefore, design of the installation for maximum effectiveness with a wet surface, the worst condition, will improve the visibility on the roadway under any weather conditions.



Glare Is Obsolete

Glare is produced in several different ways, but the effect of it is to cause the pupils of the eyes to contract in order to protect the sensitive optic nerves. This contraction of the pupil can seriously lessen the effectiveness of a lighting installation in which glare is present.

Glare as found in street lighting is of two types, both the result of improperly controlled light distribution. *Discomfort glare* is produced by the excessive contrast between a brilliant light source and its background. *Blinding glare* depends upon the total amount of light from the source in the direction of the observer, and the angle which it makes with his line of vision.

Discomfort glare is controlled in the design of the luminaire by the use of diffusing glassware or shielded light sources. The diffusing glassware distributes the brightness of the source over a larger area, eliminating the concentration of brightness at any one point on the luminaire, and reducing the over-all contrast with the background. With even the best of diffusing glassware, however, except very dense low-efficiency types, there is a concentration of brightness at the point behind which the filament is located. In modern luminaires such as Westinghouse Reflectolux and Refractolux types, this "hot spot" has been eliminated by locating the light source far enough up in the reflector so that the filament is shielded from view at normal viewing angles.

Blinding glare is most serious when the angle between your line of vision and the glare source is less than 15 degrees, and decreases as this angle increases. The major beam from the luminaire should be directed at not more than 75 degrees with the vertical (15 degrees below the horizontal), with very little light emitted above 75 degrees. At the same time, high mounting heights should be employed to remove the light source from the line of vision.

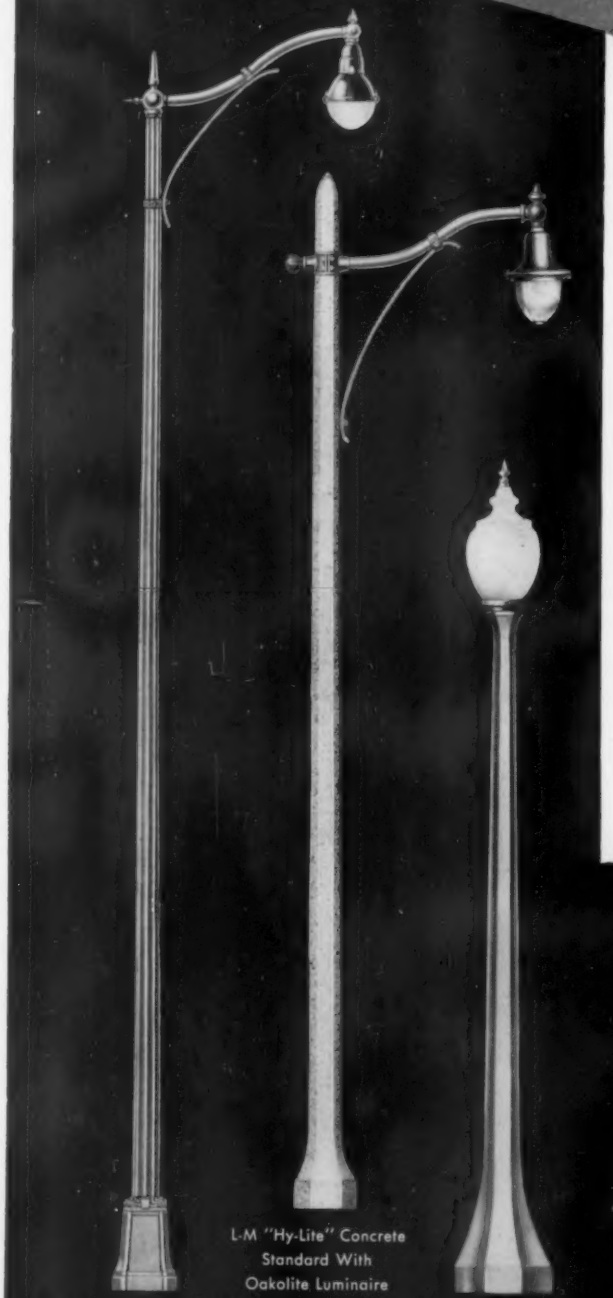
Spacing and Mounting Height

There is a definite ratio of spacing to luminaire mounting height, for each type of luminaire, which should not be exceeded. This value depends on the luminaire design and the angle at which the major beam is emitted. If the ratio is exceeded, a non-uniform brightness results, requiring continual and rapid adaptation of the motorist's eyes, quickly tiring them and slowing his responses.

The advantage of the higher mounting heights is again apparent, because they permit longer spacings without exceeding the spacing-mounting height ratio. In general, mounting heights within cities and towns should be from 20 to 25 feet above the roadway, and on highways from 25 to 30 feet above

EVERYTHING YOU NEED *in Street Lighting Equipment*

Complete White Way, or just a few replacement parts . . . your L-M representative stands ready to give you his fullest cooperation. In the complete L-M Street and Highway Lighting line you will find the *right* equipment for your job . . . in efficiency, good appearance, and low maintenance cost.



L-M Pressed Metal Standard With Spherolite Luminaire

L-M "Hy-Lite" Concrete Standard With Oakolite Luminaire

L-M "Liberty" Cast Iron Standard With National Jr. Luminaire

L-M Spherolite Luminaire With Ornamental Design

L-M Controlite Luminaire

LINE MATERIAL CO.

the roadway. The trend in both cases is toward higher mountings.

Luminaire Design

The considerations of the foregoing paragraphs require that the majority of the light from the lamp shall be directed by reflection or refraction down to and along the road surface. The trend in street and highway lighting is therefore toward almost exclusive use of the pendent luminaire. The upper reflectors of these luminaires, which can be made an integral part of the mechanical design, make them inherently more efficient than the post-top luminaire with a glass canopy.

This higher efficiency, plus the more effective position of the pendent luminaire out over the roadway, gives a much higher surface brightness from a pendent installation than from a similar post-top installation.

Direction of light up and down the street is accomplished by means of directing reflectors, as in the asymmetric Reflectolux Jr. and Sr. and the sodium highway luminaires, or by means of refractors as in the Refractolux Jr., Hi-Lux, Multilux and ornamental post-top luminaires.

Design Your Own System

A comprehensive street-lighting plan puts most light where it is most needed; produces economy of operation; permits economy in stocking spare equipment, simplifies future extensions; minimizes extent of outages; permits improvements to be spread over a number of years; permits improvements to be made in conjunction with other improvements, such as street paving, or electrical distribution systems; insures uniformity of installation as improvements are made.

In establishing a plan, streets should be carefully classified as to type of street and amount of traffic. A complete map of the city showing the classification of streets by means of a color code or similar method of differentiation between streets is necessary. The following classification with suggested symbols, which can be simplified in accordance with the size of the problem, is suggested:

a. Business streets
   1. Primary—blue
   2. Secondary — (larger cities only) brown
b. Thoroughfares
   1. Primary—red
   2. Secondary—green
   3. Traffic feeder streets—(larger cities only) purple
c. Residential streets and alleys—not colored
d. Highways—orange
e. Dangerous intersections — yellow; also other special locations such as traffic circles
f. Park drives and bridges—(classify under thoroughfares, residential streets, and highways, according to type of traffic)

Divided roadways should be treated as two separate roadways, unless the center parkway is under 10 feet and contains no obstructions to lights, and unless units are located at the outside of the roadways.

Business and thoroughfare streets have been classified according to maximum traffic density per hour as follows:

Heavy—Over 1,200 cars, both directions
Medium—500 to 1,200 cars, both directions
Light—Up to 500 cars, both directions

The illumination levels recommended, except for business streets, are based on considerations of safety.

For mercury-incandescent lighting, recommended lamp combinations are (a) one 400-watt mercury and two 150-watt incandescent, total output 21,000 lumens; and (b) one 250-watt mercury and two 100-watt incandescent, total output 10,500 lumens.

No differentiation is made for the type of pavement, since all types will have virtually the same reflection characteristics when wet, and since *wet weather is the condition for which the installation should be designed.*

No Vision—People Perish

By F. VICTOR WESTERMAIER
Vice-President, Welsbach Street Illuminating Co.

STATISTICS show these accident facts for the two eight-year periods 1922-29 and 1930-37:

	1922-29	1930-37
Car registrations increased to	26,500,000	28,500,000
from	12,000,000	26,500,000
An increase of	14,500,000	2,000,000
Traffic deaths totaled	181,750	277,500
Per million cars	1,144	1,333
At night	93,000	159,200
In day	88,750	118,300

The effect of curtailment of street lighting during the second period is directly reflected in the tremendous increase of 71 per cent in night fatalities. Selective enforcement of traffic regulations, which very materially kept daytime fatalities in check, apparently had little or no effect on those occurring at night, which increased year by year.

The foregoing certainly demonstrates a direct relationship of street lighting and its curtailment to night traffic fatalities: "Where there is no vision the people perish."

Fortunately, the application of modern illuminating principles and equipment makes it possible to provide adequate visibility on the streets so that the difference between night and day traffic hazards can be practically eliminated.

Dallas, Texas, analyzed its traffic problem, and, by methods similar to those made famous at Detroit, established an outstanding record in saving lives during 1939. Hartford and Syracuse have both contributed their quota of life-saving through safety street lighting.

An interesting test was carried out in Chicago November 15, 1937, to November 15, 1938—Utilities Research Commission Case No. 61—to determine the effect of sodium-lamp lighting on night accidents at three heavy traffic intersections. The report, submitted by O. R. Hogue, chairman of the committee in charge, shows that by adding sodium lamps to the existing incandescent lamps, accidents dropped as follows:

	Per Cent Reduction
Number of persons injured	67.5
Number of personal-injury accidents	64.8
Number of property-damage accidents	54.1
Total number of all accidents	57.9

Many safety engineers recognize the unfortunate position of public officials who are safety-minded and would willingly carry out safety lighting programs but are unable to do so because of the condition of municipal finances. They will act, however, when the general public finds its united voice to demand that no more shall perish because of the lack of vision.

The United States Junior Chamber of Commerce, as a civic organization, has started a country-wide movement for "Safety with Lighting" that is bound to produce national benefits.

The Slogan "Better Light—Better Sight" has been effective because of its truth. Of equal truth, it might be said of the streets:

"Better sight—longer life." Indeed, it is incomprehensible that with all the publicity given to the appalling increase of traffic accidents and fatalities accompanying the tremendous increase of motor vehicles in this country during the last decade or two, we have not had a revolution against it.

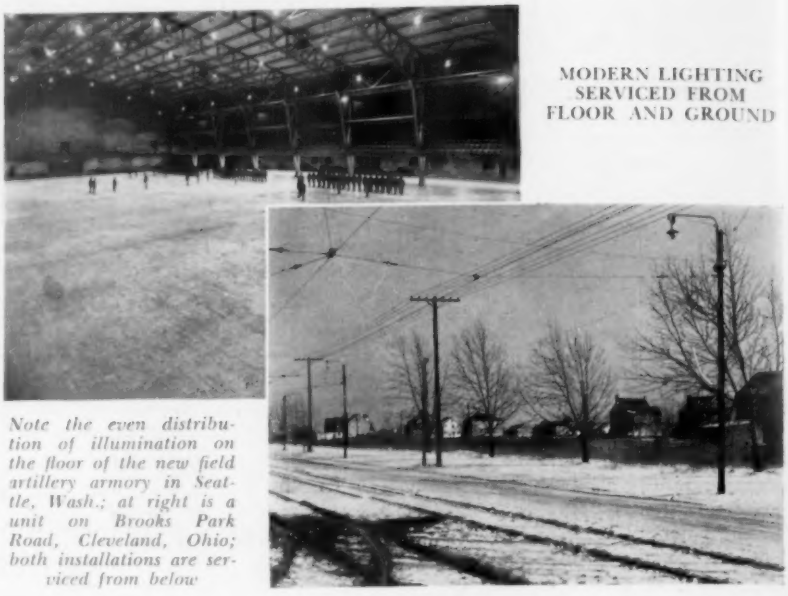
Servicing High Lights from Below

EVEN the best of modern luminaires must be serviced, and much is gained in economy and convenience if this can be accomplished from the ground or floor—which can be done by means of lamp-lowering hanger equipment. New models just announced are applicable to high-positioned floodlight mounting on building sides, poles, or catenary suspensions, and fill a long-felt need in the illumination of recreation fields, ball parks, swimming pools and tennis courts. They are designed to permit the floodlight units to be disconnected from the electric circuit, lowered to the ground for servicing, returned to their former position and locked mechanically and electrically into the electric circuit, all from ground level. This entire operation is handled by means of a single small chain or cable for each light unit. Radial and vertical-angle adjustment is provided for proper focusing of floodlights, and made at ground level.

The lighting units may also be quickly removed for protection or storage over the winter months; and attached, focused and returned to service, all from the ground.

The same hangers are especially suitable for street lighting hung from span wires or pole brackets, and they eliminate tower trucks. One man in a light truck can service a large number of such lights from street or truck level. As these hangers have Underwriters' approval for 25 amperes and 600 volts, they can be used on the usual multiple or parallel circuits and series circuits within this range where pole transformers or separate shunts are used. They are, however, not adapted to straight high-voltage series work, for no automatic shunt is provided. They cover both indoor and outdoor use for standard screw-stem reflecting units, for any mounting.

T. B. FARRINGTON,
President, The Thompson Electric Co., Cleveland, Ohio.



MODERN LIGHTING SERVICED FROM FLOOR AND GROUND

Note the even distribution of illumination on the floor of the new field artillery armory in Seattle, Wash.; at right is a unit on Brooks Park Road, Cleveland, Ohio; both installations are serviced from below

Junior Chamber Means Light Up to Date

IN closing its annual convention in Tulsa, Okla., on the night of June 24, the U. S. Junior Chamber of Commerce broadcast over the N.B.C. network a brief talk by U. S. Senator John H. Bankhead of Mississippi on the need for correct installation of stop signs and traffic signals, the construction of new pavements and the provision of expert advice, in connection with the Junior Chamber's effective drive for street and highway lighting, especially street lighting in the midst of populous communities. Senator Bankhead, reminding his listeners that his father had sponsored the Federal Safety Road Act of 1916, called attention not only to present street safety problems, but also to those to come.

In a brief summary preceding this talk, Harry Barsantee, Director of Safety of the Travelers Insurance Co., stated: two-thirds of the traffic deaths happen at night when only one-quarter of the day's traffic is moving; by enlightened thinking and energetic application New Jersey has cut its night fatalities 40 per cent; a Cleveland experiment with modern street lights cut fatalities by two-thirds; despite present awakened activity, street lighting in most cities is 20 years behind the motor age; the cost of modern street lighting is so far from prohibitive that frequently it is a mere matter of more efficient equipment which provides far more illumination for the same wattage.

Special compliments were paid the street-lighting efforts of Chicago, Dallas, Denver, Des Moines, Greeley, Colo., Kansas City, Mo., Long Beach, Calif., San Francisco and Tulsa.

THE WORLD'S BEST-LIGHTED BRIDGE?

This highway bridge over the Delaware River between Phillipsburg, N. J., and Easton, Pa., lighted by 85 G. E. luminaires with 25,000-lumen lamps, is said to be the world's best-lighted bridge. The top view shows the entire bridge; the middle view was taken on the bridge; the bottom view is of the toll plaza on the New Jersey side

The American City

PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.

How Has Traffic Congestion Been Relieved on This Famous Street?
(See page 7)